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ABSTRACT

This volume presents selected articles related to the impact of early intervention programs. This is part of a two volume set designed to showcase some of the best cutting edge research in these programs. This volume focuses specifically on aspects of the programs that have proven to be most successful in helping students and meeting programmatic needs. This issue: shows why the programs are needed; describes the types of programs available; presents successful components of programs, and shows program impact data. Following an introduction by Adrianna Kezar on the importance of early intervention programs, an article by Laura W. Perna, "Early Intervention Programs: A New Approach to Increasing College Access," provides a review of all the programs, noting that two core principles of early intervention college programs are support services for academic readiness and guaranteed financial assistance. Two articles on key program elements are: "Early Education Awareness Activities: Interventions That Make Postsecondary Education a Viable Goal" (Ann S. Coles); and "Why Do Parents Become Involved in Their Children's Education?" (Kathleen V. Hoover-Dempsey and Howard M. Sandler). Articles dealing with the effects of early educational awareness include: "Do Early Educational Awareness Programs Increase the Chances of Eighth Graders Reaching Higher Education? (Daniel Mayer); "The National Evaluation of Upward Bound: Summary of First-Year Impacts and Program Opportunities" (David E. Myers and Mary T. Moore); "Toward Resiliency: At-Risk Students Who Make It to College" (Laura J. Horn and Xianglei Chen); and "Programs at Higher Education Institutions for Disadvantaged Precollege Students" (Bradford Chaney, Laurie Lewis, and Elizabeth Farris). A final selection, "Toward a Typology of Early Intervention Programs" (Robert H. Fenske, Jonathan E. Keller, and Gil F. Irwin) deals with future research. The

original publication information for each article is appended at the end. (Most of the articles contain references.) (CH)

VOLUME 4, WINTER 1999

ADVANCES IN EDUCATION RESEARCH

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Foreword

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This fifth volume of Advances in Education Research includes previously published articles from selected refereed journals, which identifies the best research on the impact of early intervention programs. The articles are reproduced with the permission of the authors and the journals in which they originally appeared. They were written by individuals who are practitioners and experts in the field of early intervention.

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Early Intervention for College

Adrianna Kezar
Director, ERIC Clearinghouse on Higher Education
Assistant Professor, George Washington University

Introduction

Access to higher education becomes increasingly important as economic, social and political equity within our society continues to be connected with educational achievement. As the report, *Missed Opportunities* states "expanding educational opportunity has become increasingly important as the benefits that accrue from a college degree have grown" (TERI, 1997). Furthermore, national economic success and global competition depends on a highly skilled populace with the abilities to fulfill job responsibilities in the next millennium. Our democracy depends on a well-educated populace; voting, community organizing, policy development are all greatly enhanced by education. These commonly discussed conditions have lead to a discussion about the ways in which we can guarantee that *all* of our population has the opportunity to go to college. In particular, low income, first generation (student for whom parents' highest level of education is a high school diploma or less), minority, children of divorce, and welfare recipients have difficulty finishing high school and continuing on to college. These are the groups that are growing within our population, demographic projections present an disheartening picture for the future of educational opportunity and access unless trends of attendance among these groups can be reversed.

Why is early intervention important?

Studies have examined barriers and facilitators of opportunity. An example of the former is a recent report from The Education Resources Institute (TERI) which describes this group as "disadvantaged college aspirants" since a myriad of factors work against these individuals' success. One of the factors that makes their success difficult is that the minority student is also often the child of divorce and low-income. The combination of these factors increase the barriers to opportunity. Yet, research, policy and practice have much to offer to address this trend. *One of the major programs recommended to address the problems faced by disadvantaged college aspirants students is early intervention for college programs.*

Early intervention for college programs have become increasingly important as the commitment to affirmative action has been reversed in some states. More and more states will most likely look to other strategies for meeting their goals of creating access, opportunity, and equality. Early intervention programs are being discussed in Texas and California; most likely other states will also follow this trend of trying to discover other models. Federal legislation such as the Gear Up program, also signal that policymakers realize the value of these programs to the future of the country. This collection of research will be particularly important for informing the work of individuals securing Gear Up funds and the resultant programs.

Organization of the contents

This *Advances in Education Research* is part of a two volume set designed to showcase some of the best cutting edge research on early intervention programs. **Volume 4 (Fall, 1999)** provides an introduction to the types of earlier intervention programs, research on why the programs are necessary, and ends discussing the value of a classification scheme. This first volume makes readers aware of the vast number and types of programs and the research that has been conducted categorize this vast terrain. It also provides research evidence for the necessity of the programs. **Volume 4 (Winter, 1999)** also presents research on the landscape of early intervention programs, but focuses more specifically on aspects of the program that have proven to be most successful in helping students and meeting programmatic needs. Furthermore, **Volume 4 (Winter, 1999)** presents research on the impact of early intervention programs. This information in total: why the programs are needed, the type of programs available, successful components of programs, and program impact data, collectively represent the most comprehensive collection of research gathered in one volume about early intervention for college programs.

Critical factors

Why is it that these groups are less likely to enroll in higher education? Financial aid or assistance is an obvious

factor impacting access. Financial support for low-income students has been reduced over the last ten years with middle class subsidies taking their place. Low income students are less likely to take loans or incur debt. The article by Thomas Flint describes how early information about college funding is critical to access. Information about the financial aid system is difficult to obtain and understand, especially if your parents did not attend college. Other studies and policy analysis have had similar findings (Volume 4, Fall). A recent national campaign and website called College is Possible sponsored by the American Council on Education is assisting in providing needed financial aid information (and general information about entry to college). Yet even this information mostly reaches middle class audiences since it depends on technology for outreach. This continues to be a problem.

Staying in school is another critical factor. The drop out rate among disadvantaged groups is much higher. For Hispanics, for example, the drop out rate in high school is close to 50%. Often, students' parents never completed high school or did not attend college, so they often have no idea about the value (either economic or social) of a college or high school education. Also, they often lack parental and friends support to pursue higher education or have family responsibilities to maintain. Also, welfare recipients and low income students are often homeless or moving frequently which impacts their stability in school. The GED has been enormously successful for helping adults to complete high school degrees if they drop out of high school. Going back to college after completing a GED sometimes occurs. However, it is difficult for many people to return to college later in life if they have a family and other responsibilities. So, having students complete their high school degree before taking on these responsibilities is critical.

A student's academic record has a significant impact on college entry. Low grades will limit a student's options. Non-rigorous course work will often result in lower test scores that impact admissions. Furthermore there is evidence that certain groups do not perform as well on standardized tests (ACE, 1998). Also, related to academic record is the school's rigor. Poor students often come from areas where there is substandard elementary and secondary schools.

Another barrier is preparing the college admissions materials. As the McDonough article describes, a whole business has developed around standardized test preparation and on counseling for admissions packet submission (Volume 4, Summer). A cadre of private counselors can be hired to assist families in helping their son or daughter gain entree into college. Counseling rarely takes place in the schools anymore, especially due to budget cutbacks where one counselor might be assigned to 250 students.

Immigrants often have the added barrier of learning English and needing remedial work. The reduction in funding for remedial education programs impacts students' ability to obtain the education needed to prepare for and be admitted to college. Also, college remediation programs are being reduced in number, especially within the four-year institutions, limiting access points for students. Often a student has excellent math and analytical skills and can perform college level work with some language skills coaching.

Thus, the factors impacting children are complex. Even though the conditions impacting children are complex, some early intervention programs offer limited services. This is primarily due to limited funding. Thus the programs vary significantly from offering only monetary assistance, to support and mentoring, to multi-faceted programs that bring in parents and teachers. More recently, as research about impact of the programs has become available, more comprehensive programs are being shown to be most effective, encouraging changes in the funding and emphasis of programs. This exemplifies why the research in this volume is so important for shaping and providing opportunity for a future.

Highlights of Volume 4, Winter

This volume highlights the program components that are most important to success and showcases some of the research on the impact of early intervention for college programs. It should be noted that the body of literature on impact is extremely limited. Many program evaluations have been conducted, but few studies of impact from a more generalized perspective have been conducted. Dr. Perna's and Dr. Fenske's articles on the massive number and variety of programs illustrates one of the main reasons impact studies do not exist—it is difficult to compare such distinctive programs. Any national or even regional study will have to contend with this variety.

Program overview

Early intervention Programs: A New Approach to Increasing College Access, is an important article reviewing all the

programs. It notes that the two core principals of early intervention for college programs are support services for academic readiness and guaranteed financial assistance. Dr. Perna's work reminds us that programs are supported by individuals, private foundations, community organizations, and the state and federal governments. She also reviews the variety of goals, summarizes evaluation studies, and reviews some of the challenges facing programs. Few research pieces are as comprehensive and helpful in assisting public policy and shaping programs. Some of the issues that Dr. Perna implored for further research are examined within this issue, including the balance between financial and academic support, the appropriate age for intervention, eligibility requirements, parent involvement, linkages among resources, and ensuring adequate funding.

A brief overview of a national study by the federal government paints a picture of the types of precollege programs specifically sponsored by higher education institutions. This is a growing sector illustrated through the recent funding of the Gear Up program. This study serves as a baseline for: 1) what programs exist; 2) balance among financial and support services; 3) specific precollegiate services that were seen as most helpful—social skills development, information about college admissions, or career counseling; and, 4) differences in some of the larger programs such as Upward Bound.

Key program elements

Dr. Coles examines why intervention is best at the middle school age, one of the major challenges described by Dr. Perna. This research reinforces other studies that if a consciousness about postsecondary education is not developed in these years, it will most likely be too late in high school since curricular patterns and scholastic habits are already strongly established. Gear Up is focused on the middle school because of research such as Dr. Coles. This study also illustrates the importance of parental involvement, also highlighted in Perna's research. Dr. Coles suggests some promising classroom activities and academic support services for students. The next article provides more in-depth descriptions of the importance of parent involvement.

Hoover-Dempsy and Sandler review the significance of parent involvement for student success. They remind us that any program will be limited in impact without the reinforcement of parents, who spend each day with the child. Yet, programs that encompass parental involvement will only be successful if they provide parents with a sense of efficacy—a belief that they can help to recreate their child's life and opportunities.

Effects of early educational awareness

Studying impact is critical. If federal policies and tax payer money continues to support programs such as TRIO and Gear Up, it is important to illustrate these programs are meeting their goals. One of the early studies conducted on impact was by Daniel Mayer examining eighth graders in educational awareness programs. This study provides evidence that these students enrolled in college preparatory programs had higher expectations of attending college than the control group. However, this study did not examine the actual number that went on to college. A recent national study of Upward Bound provides further evidence of the impacts of these programs on students and college aspirations. Although Upward Bound continues to be studied, the interim report from 1997 suggests that students have higher expectations of going to college and take more academically rigorous courses, as found in Mayer's study. A similar study is being conducted on the Talent Search program. Results should be available in the next few years. An important study that examined at-risk students that make it to college by Horn, Chen and Associates demonstrates that students participating in high school outreach programs had almost doubled the odds of enrolling in a 4-year college than their peer who did not participate. This is a significant finding about the impact of early intervention for college programs. The most important factor in making it to college was rigorous curriculum in high school. This reinforces the goals of early intervention for many college programs. This study also confirmed the significant role that parents play in youth's expectations and success. Horn and Chen conclude that parents play a VERY influential role in getting their moderate to high risk teens to enroll in postsecondary education. Although impact research is preliminary, it does reinforce the importance of these programs for college attendance patterns. It also helps us to shape the best programs by assuring parental involvement, enforcing academic course work, taking college preparatory courses, establishing high expectations, and discussing the college application process.

Future research

Lastly, the article by Fenske provides directions for future research. This article was commissioned specifically for this volume since so little research currently exists beyond on-shot evaluations of early intervention for college programs. Dr. Fenske provides advice and a framework for important activities, developing a topology of early intervention

Introduction

programs. This topology can serve two needed roles: 1) a framework for future research this future research agenda; and, 2) a framework for comparing current programs so that practitioners can exchange ideas among similar efforts. Without this topology, impact research will continue to be difficult to conduct and program development stunted. We hope this topology will lead to high quality research in the future which will be critical to continued public support of these programs.

All of these studies help us understand the need for early intervention for college programs and suggest some aspects of successful programs. Dr. Laura Perna's article describes the landscape of early intervention programs, noting that many are not focused on college preparation. This compendium is focused only on programs that assist students in obtaining entry into college. Yet, it is critical to understand other early intervention programs. For example, programs that keep kids from dropping out of middle or high school area central to the success of the early intervention for college programs. Understanding the breadth of programs, purpose, audiences, etc. is critical for understanding the system of early intervention programs in the country. Future research must also examine the interrelation of programs focused on college preparation with programs that serve other goals. Surely these programs reinforce each other and it is important to understand their interaction to assure the success of all students, especially disadvantaged or at risk students.

In conclusion, only the voice of a student can really illustrate the need and value of these programs:
Reflecting on my pre-college experiences, I came to the realization that early intervention and preparation to college actually began in middle school. Entering gifted and talented programs in elementary and junior high, I performed very well academically, enjoyed attending school, and became very involved in extra-curricular activities. Therefore, my parents had very high expectations that I would not only complete high school but pursue post-secondary education. Certain teachers and my guidance counselor from junior high school also took notice of my accomplishments. With their direction and support, I was able to gain acceptance into Benjamin Banneker Academic, the District of Columbia Public School's college preparatory high school.
Banneker provided an academic curriculum that was rigorous and challenging. A very small school, students were able to receive extra attention from teachers, guidance counselors and the administrative staff. A safe, supportive and well-known school for its successful entrance of graduates into college and scholarships awarded to seniors, the environment was very competitive yet encouraging towards my pursuit of a college education.
Although I had proven from my past academic record and community service that I deserved my place at Banneker, I could not help but feel somewhat a step behind in college preparation. Many students came from families where one or both of their parents attended college or had siblings pursuing their degrees. My oldest brother graduated from the University of the District of Columbia but was serving active duty in the U.S. Air Force. My father was retired from the D.C. Department of Recreation and worked as a part-time caddie for a golf club in Maryland. My mother worked as a custodian for the Congressional office buildings on Capitol Hill. Therefore, no one at home had really been through the experience of applying and attending college.
The Howard University Upward Bound program was very instrumental in offering the extra support for a student with my particular needs as a first generation college bound student. Before high school, I really did not understand that I had fit the characteristics of being considered a low income student as well. However, attending high school with the sons and daughters of surgeons, lawyers, principals and judges awakened me to my own social and economic status and its disadvantages when applying to college. Upward Bound provided an opportunity to meet other peers with similar backgrounds and experiences outside of high school. The academic tutoring, financial aid advising, workshops, fee waivers (for college applications and standardized testing) and personal counseling had a positive impact on my successful completion of high school, application and entrance into college. The program director, head counselors and college students (tutor-counselors) were very positive role models whom continue their relationships and support for former Upward Bound students after high school. For instance, two of my former Upward Bound counselors attended my college graduation.
Therefore, early intervention had a significant impact on my success in entering and maintaining enrollment in college. The desire to attend college was instilled at a very young age; however, the special support provided by teachers, school guidance counselors and the Upward Bound program as a whole answered the many questions that I had about higher education and directed me towards the extra resources that I needed to prepare successfully as a first generation, minority, low income student. Unfortunately, many peers from my neighborhood did not have the opportunity or were not interested in pre-college programs. As a result, they became discouraged from attending college, dropped out after freshman year or went through extra hardships to obtain their degree.

Sherri Martin, Trinity College, Masters Program in Student Personnel Administration

Acknowledgments

Several groups have been extremely influential in helping to drive the national dialogue on access and equal opportunity. Many of these groups have developed programs that promise to broaden the group of individuals entering higher education. First, the Council for Educational Opportunity (formerly NCEOA) has been involved in research, advocacy, program development, and policy that assists in assuring access to all students, particularly first generation, minority, and low income students. The Education Resources Institute (TERI, 1985) is a non-profit organizations that aid students in attaining education and assists institutions in providing education in an economical fashion, assuring access. The College Board has several programs and conducts research on issues of access. Equity 2000 is a widely recognized program for first generation students. The American Council on Education Annual Trends of Minorities in Higher Education has been influential in impacting policy and practice related to this particular population. It is important to acknowledge the work of these organizations and the very dedicated individuals within them. Also, the Offices of Policy and Planning and Educational Research and Improvement at the Department of Education have been instrumental in commissioning studies of early intervention for college programs. They should be commended on providing evidence to support the importance of these programs.

Also, I want to thank the individuals who served in an advisory capacity for this issue of Advance in Education Research

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Anne Coles, TERI
Robert Fenske, professor, Arizona State University
Laura Perna, Patterson Research Institute
Andrea Reeve, National TRIO Clearinghouse
Scott Swail, The College Board

They each provided helpful advise and are committed and passionate about helping disadvantaged and at-risk students. I applaud their dedication to providing opportunities for all youth.

1 Program overview

Early Intervention Programs: A New Approach to Increasing College Access

Laura W. Perna, Ph.D.
Research Scientist, Frederick D. Patterson Research Institute

Introduction

One of the primary goals of student financial assistance programs is to provide academically qualified students with equal access to postsecondary education regardless of their personal capacity to pay. Although the federal government has provided financial assistance to college students for more than thirty years, various subgroups, particularly blacks, Hispanics, and those with low family incomes, continue to be underrepresented in higher education (Mortenson and Wu, 1990). The underrepresentation of these groups among college students is in part due to lower rates of high school graduation and lower rates of college attendance among those who graduate from high school.

College choice research (e.g., Hossler, Braxton, Coopersmith, 1989; Paulson, 1990) suggests a student's motivation to enroll in college is influenced by parental encouragement, individual ability and academic potential, peer support, and family financial resources. Some research also suggests that students and their families must be assured early in a student's formal education that financial aid for college will be available in order to guarantee that financial concerns play no role in a student's decision to enroll in a postsecondary institution (National Commission on Responsibilities for Financing Postsecondary Education, 1993).

In recognition of the effects of these factors, early intervention programs generally focus on enhancing the awareness of and readiness for college among underrepresented groups early enough in their lives in order to have a positive influence on their educational outcomes. Early intervention programs typically include two components: 1) support services to improve academic readiness for college and 2) guaranteed financial assistance for college to ensure students have the resources necessary to attend college. One of the first early intervention programs was initiated in 1981 by Eugene Lang, a philanthropist, in East Harlem, New York. Over the past five years, these programs have become more common, as the federal government and various state governments have adopted variations of Lang's idea.

The purpose of this paper is to examine the objectives and structures of early intervention programs. The paper is presented in five sections: 1) an overview of existing early intervention programs; 2) an analysis of the goals of early intervention programs; 3) a preliminary evaluation of existing early intervention programs; 4) a discussion of the primary issues and challenges influencing the success of early intervention programs; and 5) a conclusion that discusses implications for higher education.

Early intervention programs aimed toward expanding access to college for underrepresented students are relatively new. Therefore, because targeted students have not yet graduated from high school, a complete evaluation of the programs' success in terms of promoting access to, academic success in, and graduation from college is not yet possible. But, by describing the need for, the characteristics of, the goals of, and the challenges facing early intervention programs, this paper offers higher education leaders and policy makers a framework for monitoring and evaluating the effectiveness of these programs.

Existing early intervention programs

One of the earliest and most well known early intervention programs was initiated in 1981 by Eugene Lang, a philanthropist. As part of the 1992 reauthorization of the Higher Education Act of 1965, the federal government authorized the National Early Intervention Scholarship Program to provide matching grants to states for eligible programs. Since 1989 several state governments have established early intervention programs.

Program overview

Eugene Lang—"I Have a Dream"

In 1981 Eugene Lang returned to P.S. 121 in East Harlem, a public school he had attended more than fifty years earlier, to speak with a class of sixth graders. During his talk, he promised the 61 students that if they graduated from high school, he would pay the costs of their college tuition. Although the school principal predicted that just 25% of the sixth graders would graduate from high school, by January 1995 90% of the 54 students who remained in contact with program staff had graduated from high school or earned GEDs, 60% had enrolled in college either full or part-time, and more than two-thirds had completed two or more years of college.

To encourage other philanthropists to replicate this initiative, Lang founded the I Have a Dream Foundation (IHAD), a 501(c)(3) public charity, in 1986. IHAD programs are designed to ensure that students "graduate from high school functionally literate and prepared either for further education or for fulfilling employment" and include not only guaranteed free college tuition, but also academic, cultural, and recreational activities (IHAD Foundation, January 1995, p. 12). Individual sponsors identify a group of students to "adopt," such as an entire elementary school grade or all children of a certain age living in a public housing project (between fifty and seventy-five students, on average). The sponsor is responsible for providing or securing financial support for the project, about $400,000 for programmatic costs and college scholarships. The sponsor also hires a full-time Project Coordinator to assist students, families, and schools, and pledges to work with and develop relationships with the children through high school graduation. As of January 1995, 158 IHAD Projects had been established in 59 cities and 27 states, involving 12,000 students.

National Early Intervention Scholarship Program

As part of the 1992 amendments to the Higher Education Act of 1965, Congress authorized a new program, the National Early Intervention Scholarship Program, to provide 50% matching funds to states for eligible programs. Eligible programs have three primary components:

- A guarantee to low income students who receive a high school diploma or its equivalent that they will have the financial assistance necessary to enroll in a higher education institution. The financial assistance component of a state's program must cover at least 75% of the average cost of attending an instate, four year public institution.
- Counseling, mentoring, academic, outreach, and other support services for elementary, middle, and secondary school students who are at risk of dropping out of school.
- Programs to inform students and parents about the advantages of postsecondary education and procedures for obtaining financial assistance.

Six states received funding under the National Early Intervention Scholarship Program for the 1994–95 academic year: California, Indiana, Maryland, New Mexico, Vermont, and Washington. Although Congress authorized the National Early Intervention Scholarship Program for five years at $200 million for fiscal year 1993 and "such sums as may be necessary" for subsequent years, Congress actually appropriated $1.9 million for fiscal year 1994 and $3.1 million for fiscal year 1995. For fiscal year 1996, the U.S. Department of Education requested no funding and, in addition, requested that funds appropriated for fiscal year 1995 be rescinded. In the Fiscal Year 1996 Budget document, the U.S. Department of Education explained that, "Although this program could help forge new Federal-State partnerships aimed at encouraging disadvantaged youth to pursue postsecondary education, the current budgetary situation precludes the investment needed to effectively support such partnerships" (p. 72).

State Early Intervention Programs

Since 1989, a number of state governments have established early intervention programs. The programs are of three types:

- Programs that include both guaranteed financial assistance and support services, such as Rhode Island's Children's Crusade for Higher Education, Indiana's TwentyFirst Century Scholars Program, Hawaii's Opportunity Program for Education, Oklahoma's Higher Learning Access Program, Virginia's Guaranteed Assistance Program, and North Carolina's Legislative College Opportunity program. These programs include the components required under the National Early Intervention Scholarship Program.
- Programs that include guaranteed financial aid but no support services, such as Louisiana's Tuition Assistance Program, New Mexico's Scholars Program,[1] Arkansas' Academic Challenge Program, and Georgia's Helping Outstanding Pupils Educationally (HOPE) program. In contrast to other state level, needbased financial

assistance programs, students must satisfy minimum academic achievement requirements in order to receive a scholarship under these four programs.

- Programs that include support services but no financial assistance. These include New York's Liberty Partnership Program, Maryland's College Preparation Intervention Program, and Kentucky's Destination College/Campus Serve Program. The programs established in Maryland and Kentucky were pilot programs and are no longer operating.[2]

These three types of programs differ not only in terms of their specific components, but also in terms of the students targeted. The programs that include only support services (New York, Maryland, and Kentucky) and the programs that include both financial incentives and support services (Rhode Island, Indiana, Hawaii, Oklahoma, Virginia, and North Carolina) require students to enroll in the program before the senior year in high school. The financial incentives offered under the programs in Louisiana, New Mexico, Georgia, and Arkansas are available to any high school graduate who satisfies the eligibility criteria.

Goals of early intervention programs

This section examines the goals of early intervention programs in terms of the structure and requirements of the programs. The goals of early intervention programs include:

- Increase high school graduation rates and reduce school dropout rates;
- Increase enrollment of at risk students in math and science courses;
- Ensure that high school graduates are prepared for work and for college;
- Increase college enrollment rates, particularly among disadvantaged youth;
- Encourage high school graduates to attend instate colleges and universities;
- Increase college completion rates among the state's students; and
- Improve the overall quality of life for state residents.

Increase high school graduation rates and reduce school dropout rates

A central purpose of early intervention programs is to increase high school graduation rates and reduce school dropout rates. For instance, a stated objective of Rhode Island's Children's Crusade for Higher Education is to reduce the school dropout rate among at risk students from 50% to 25%.

In an attempt to accomplish this goal, some programs include a variety of support services, such as mentoring, basic skill remediation, and tutoring. In Rhode Island, participants are required to cooperate with teachers, students, mentors, and tutors in order to remain eligible for scholarships. Some programs also require students to attend school regularly. In North Carolina, students' attendance must be at least 95%. Under the Oklahoma Higher Learning Access Program, students and parents sign a Contractual Agreement indicating that students will attend school regularly.

Early intervention programs typically target support services toward students at risk of dropping out of school. As an example, in 199394 nearly two-thirds (62%) of the new participants in New York's Liberty Partnerships Program demonstrated poor academic performance and more than one quarter (27%) exhibited inconsistent or poor attendance. Other risk factors included the following: negative peer pressure, behavior or discipline problems, low self esteem, family and/or peers who had dropped out, family crises or changed family circumstances, history of abuse or neglect, teenage pregnancy or parenting, history of substance abuse, limited English proficiency, and homelessness (The University of the State of New York, 1994).

Increase enrollment of at-risk students in math and science courses

While some early intervention programs require students to complete a high school core curriculum, others specifically seek to increase enrollment of at risk youth in math and science courses. For instance, the Academic Champions of Excellence program, one of the regional programs implemented as part of Maryland's College Preparation Intervention Program, included several activities that focused on math and science instruction for at risk students in middle school and high school (e.g., a Saturday Academy, a Summer Institute, and a weekly after-school club). In New York, Liberty Partnership Program funds have been used to develop a Career Institute for Women in Technologies (now an independently funded program), which is designed to improve the success of at risk female students in math and science careers, and to create math and science curricula for at-risk students.

Program overview

Ensure high school graduates are prepared for work and college

A stated purpose of several early intervention programs is to ensure that students are adequately prepared for work and college. For instance, an objective of Rhode Island's Children's Crusade for Higher Education is to "increase the number of 'job ready' high school graduates from the economically disadvantaged cohort by 1,600 graduates per year" each year between 2001 and 2011 (Rhode Island Office of Higher Education, 1989). A goal of Indiana's TwentyFirst Century Scholars Program is to increase the number of students prepared to enter the workforce upon high school graduation. According to the Annotated Code (11-602), Maryland's College Preparation Intervention Program is intended "to raise the level of academic preparedness of economically and environmentally disadvantaged students who go on to college," where economic and environmental disadvantage is defined in terms of college going rates, educational attainment, per capita income, and percent of families in poverty.

Table 1 shows that some states seek to ensure that participants are adequately prepared for work and college by imposing specific academic achievement requirements. To be eligible for a scholarship in Indiana, Oklahoma, Virginia, North Carolina, Louisiana, Georgia, or Arkansas, a student must earn a minimum cumulative grade point average in high school. In Georgia, the minimum acceptable cumulative grade point average for students enrolled in the college preparatory track (3.0) is lower than the minimum for students in a noncollege preparatory track (3.2). In Oklahoma, Louisiana, New Mexico, and Arkansas, students' scores on the ACT must exceed a certain minimum. In New Mexico, students who rank in the top five percent of the graduating class during either the junior or senior year of high school are exempted from the minimum ACT score requirement. In Oklahoma, North Carolina, Louisiana, and Arkansas students must complete the high school core curriculum in order to qualify for financial assistance.

Table 1

Student eligibility requirements for state early intervention programs

		Academic achievement			
State Program	Financial need	HS GPA	ACT score	Core curriculum	Behavior standards
Rhode Island	Yes			Yes	
Indiana	Yes	2.0			Yes
Hawaii	Yes				
Oklahoma	Yes	2.5	17	Yes	Yes
Virginia	Yes	2.5			
North Carolina	Yes	3.0		Yes	Yes
Louisiana	Yes	2.5	20	Yes	Yes
New Mexico	Yes		25*		
Georgia	Yes	3.0**			
Arkansas	Yes	2.5***	19***	Yes	Yes

Notes:

*In New Mexico, students must obtain a composite score of 25 or more on the ACT, a total of 1020 on the SAT, or rank in the top 5% of the high school graduating class in either the junior or senior year of high school.

**In Georgia, students in college preparatory tracks must earn a minimum high school grade point average of 3.0 while those in other tracks must earn a minimum of 3.2.

***In Arkansas, a sliding scale sets minimum grade point averages and ACT scores.

In Arkansas a sliding scale defines minimum acceptable grade point averages and ACT scores. The Arkansas Academic Challenge Scholarship Program is the only program reviewed in this study that permits those who graduate from high school without meeting the minimum academic achievement standards for financial assistance up to 24 months of additional time to complete core classes, retake the ACT, or increase their grade point average by completing college courses. All of the early intervention programs except those in Louisiana, New Mexico, Arkansas, and Georgia include support services specifically designed to ensure that students will achieve these academic standards.

Increase college enrollment rates, particularly among underrepresented youth

Most early interventions programs are aimed specifically at increasing the representation of low income students in higher education. As an example, North Carolina's Legislative College Opportunity Program is intended "to recruit new students to enroll in college in future years who might not be able to attend college without incentives" (Administrative Memorandum, Office of the President, The University of North Carolina, October 19, 1994). The eligibility criteria evidence the commitment to serving disadvantaged and at risk youth. Table 1 also shows that in order to qualify for a scholarship under any of the state early intervention programs, students must exhibit financial need.

Each program has a different definition of financial need. For instance, under the Oklahoma Higher Learning Access Program, annual family income from taxable and nontaxable sources may not exceed $24,000. Income eligibility is established at time of enrollment in the program (i.e., when the student is in the ninth or tenth grade). If at some point the student's family income exceeds this threshold, the student will not be denied a scholarship, provided the student satisfies other eligibility requirements. In order to qualify for a grant under the New Mexico Scholars Program, a student with no immediate family members enrolled in an in-state public or private college or university must have a total combined annual family income under $30,000 in "either of the calendar years ending within the student's junior or senior years in high school" (New Mexico Scholars Program Administrative Regulations, 1991). Students may receive scholarships for up to four academic years and financial need is not a criteria for continuing eligibility.

The financial eligibility criteria are more liberal under Georgia's HOPE program than under the other early intervention programs described in this study. In order to be eligible for a HOPE scholarship to attend a public instate institution, an individual graduating from high school in 1994 or later must have a family income below $100,000. (Prior to 1994 financial need was defined as family income below $66,000.) Any Georgia resident who attends an instate private institution or a public technical institute may receive a HOPE grant, regardless of family income.

Some early intervention programs supplement financial incentives and academic support services with other activities designed to increase college enrollment rates, such as college awareness programs. Activities include meetings with college admissions and financial aid staff, college sponsored summer programs, and college tours.

Another mechanism that is intended to increase students' motivation to attend college is the requirement that students utilize the scholarship before a certain age or within a certain number of years of graduating from high school. Under both the National Early Intervention Scholarship Program and the New Mexico Scholars Program, students must enroll in a postsecondary education institution before the age of 22 in order to receive financial assistance. To receive a scholarship under the Indiana TwentyFirst Century Program, students must apply to college during the senior year of high school. In Oklahoma, individuals must enroll in postsecondary education within three years of graduating from high school.

Encourage high school graduates to attend instate colleges and universities

A specific goal of both New Mexico's Scholars Program and Georgia's HOPE program is to encourage high school graduates to attend a college or university within the home state. According to the New Mexico Scholars Program Administrative Regulations (1991), the New Mexico Scholars Program is intended "to encourage New Mexico students to attend college in New Mexico, thereby making it possible for them to pursue their studies and develop their talents at both public school and higher education levels to the greater benefit of the state."

Table 2 shows that only under Rhode Island's Children's Crusade for Higher Education may students use scholarships to attend postsecondary institutions outside of the home state. This exception is attributable to the different sources of funding for the Rhode Island program. Under the Rhode Island Children's Crusade for Higher Education an eligible student may receive a partial scholarship (up to the instate costs of the University of Rhode Island) to attend any institution that has donated a scholarship to the Children's Crusade for Higher Education.

Limiting state provided financial assistance to instate institutions is consistent with state policies regarding other types of student financial aid. Nationwide in 1993-94, just 0.8% of all award dollars to undergraduates from state need-based scholarship and grant programs were used to attend out-of-state institutions (Davis, Nastelli, & Redd, 1994).

Under the state programs in which students attending private institutions are eligible for scholarships (e.g., Rhode Island, Indiana, Oklahoma, New Mexico, and Arkansas), the amount of the award is typically limited to tuition charged at instate, public institutions.

Table 2
Types Of Institutions At Which Students May Use Early Intervention Grants

State program	Vocational/Technical	2-year	4-year	Public	Private	Out-of-state
Rhode Island	Yes	Yes	Yes	Yes	Yes	Yes
Indiana		Yes	Yes	Yes	Yes	
Hawaii			Yes	Yes		
Oklahoma	Yes	Yes	Yes	Yes	Yes	
Virginia		Yes	Yes	Yes		
North Carolina			Yes	Yes		
Louisiana		Yes	Yes	Yes		
New Mexico	Yes	Yes	Yes	Yes	Yes	
Georgia	Yes	Yes	Yes	Yes	Yes	
Arkansas		Yes	Yes	Yes	Yes	

Increase college completion rates

Permitting students to renew their scholarship awards is one mechanism designed to increase college completion rates. Under most state early intervention programs, eligible students may renew the scholarships beyond the first year of college enrollment, although the number of years or number of credits is generally limited. For instance, under the Oklahoma Higher Learning Access Program, students who maintain satisfactory academic progress may receive awards for up to five years, but may not use awards to repeat courses or for courses that do not lead to completion of the bachelor's degree. As specified in the Oklahoma Higher Learning Access Act, if insufficient funds are available to make awards to all eligible students, first priority is given to students currently receiving awards rather than to first time recipients.

A recipient of a Virginia Guaranteed Assistance Program grant may renew the grant annually for up to three consecutive years, provided the student remains enrolled full-time, maintains satisfactory academic progress, maintains at least a 2.0 cumulative grade point average, has continued financial need, and engages in no criminal activity. Students receiving Georgia HOPE scholarships and attending public institutions who maintain satisfactory academic progress (i.e., a minimum of 3.0 grade point average) may renew their scholarships for up to 190 quarter hours. Full-time enrollment is not required, but recipients may not discontinue their postsecondary education for more than twelve months. Recipients of Louisiana TAP grants may renew their scholarships for up to five years, provided they remain continuously enrolled for at least two semesters per academic year, earn a minimum of 24 semester hours each academic year, and achieve a minimum cumulative grade point average of 2.5. Under the New Mexico Scholars Program students must maintain satisfactory academic progress to renew a scholarship and may receive no more than four annual awards.

Programs requiring continuous and/or full-time enrollment are designed to encourage students to complete their degrees in a timely manner. Annually renewable scholarships are intended to ensure that students have the financial assistance necessary to complete the degree. In contrast with the other programs, the North Carolina Legislative College Opportunity Program covers the costs of tuition, fees, and books for eligible students for the first year of college attendance only.

Improve quality of life for state residents

The objectives of Indiana's TwentyFirst Century Scholars Program include improving the quality of life for Indiana residents, increasing individual economic productivity, and decreasing drug and alcohol use by encouraging young people to pursue higher education. As stated in the informational brochure, "By investing in the future of Indiana youth, the TwentyFirst Century Scholars Program makes an even greater investment in the citizenry and success of

Indiana people." The early intervention programs established in Virginia and Rhode Island are also intended to improve the quality of life for state residents.

Preliminary evaluation

Programs that include both financial and academic components

All of the programs that include both financial incentives and academic support services (Rhode Island, Indiana, Hawaii, Oklahoma, Virginia, and North Carolina) require students to begin participating in the program before the senior year in high school. Because participating students have not yet graduated from high school, the effectiveness of these programs in increasing high school graduation and college enrollment rates cannot yet be assessed. For instance, the first scholarships will not be disbursed until the 1995–96 academic year under Indiana's TwentyFirst Century Scholars Program and the year 2001 under Rhode Island Children's Crusade for Higher Education.

Programs that include financial incentives only

The financial incentives offered under the programs in Louisiana, New Mexico, Georgia, and Arkansas are available to any high school graduate who meets the financial need and academic achievement criteria. Table 3 shows that the number of scholarships awarded to undergraduates in 1993–94 under state early intervention programs varied by state, ranging from a low of 445 in New Mexico's Scholars Program to high of 19,380 in Georgia's HOPE program. Nearly one-third (29.8%) of all high school graduates in Georgia in 1993–94 received a scholarship under the state early intervention program, compared to 15.2% of high school graduates in Arkansas, 5.0% in Louisiana, and 2.8% in New Mexico. In 1993–94, recipients of early intervention awards represented 9.6% of FTE enrollment in public higher education in Georgia, 5.4% in Arkansas, 1.5% in Louisiana, and 0.6% in New Mexico. Since 1993–94 was the first year in which awards were made under Georgia's HOPE program and since the awards are annually renewable, the percent of Georgia HOPE recipients per FTE enrollment will likely increase over the next few years. Similarly, since the first awards were made under the Arkansas Academic Challenge program in 1991–92, the percent of recipients under this program per FTE enrollment will also likely increase. Awards have been made under both the Louisiana TAP and the New Mexico Scholars programs since 1990–91.

Table 3

State Early Intervention Awards Per High School Graduate and FTE Public Higher Education Enrollment: 1993–94

State program	Number awards	H.S. Graduates	Awards/ H.S. grads	FTE public enrollment	Awards/FTE enrollment
Arkansas Academic Challenge	4,000	26,263	15.2%	74,115	5.4%
Georgia HOPE	19,380	64,963	29.8%	202,591	9.6%
Louisiana TAP	2,040	40,703	5.0%	134,990	1.5%
New Mexico Scholars	445	16,152	2.8%	71,081	0.6%

Notes: Figures are estimates.

Number of awards from Davis, Nastelli, and Redd, 1994. Number of high school graduates and FTE public enrollment from "State Profiles: Financing Public Higher Education 1978 to 1994," 1994, Kent Halstead.

Table 4

Awards To Undergraduates Under State Early Intervention Programs: 1992–93and 1993–94

State program	1992-93 Number awards	Total $s awarded (millions)	Average award/ student	1993-94 Number awards	Total $s awarded (millions)	Average award/ student
Arkansas Academic Challenge	2,506	$2.55	$1,017	4,000	$ 3.75	$ 938
Georgia HOPE	—	—	—	19,380	$21.52	$1,111
Louisiana TAP	1,802	$3.47	$1,927	2,040	$ 4.33	$2,120
New Mexico Scholars	445	$1.27	$2,847	445	$ 1.73	$3,876

Notes: Figures for 1993-94 are estimates.

From Davis, Nastelli, & Redd, 1994.

Program overview

Table 4 shows that Georgia's HOPE program is substantially larger than the early intervention programs in the other three states in terms of number of awards (19,380 in 1993–94) and total dollars awarded ($21.52 million in 1993–94). The average award per student, however, was higher under the programs in New Mexico ($3,876) and Louisiana ($2,120) in 1993–94 than under Georgia's program ($1,111). The average award under Arkansas' Academic Challenge program was $938 in 1993–94, down from $1,017 in 1992–93. The average award per student increased between 1992–93 and 1993–94 in both Louisiana (from $1,927 to $2,120) and New Mexico (from $2,847 to $3,876). The decrease in the average award in Arkansas between 1992–93 and 1993–94 despite an increase in total dollars awarded (from $2.55 million to $3.75 million) is largely attributable to the increase in the number of students receiving scholarships between 1992–93 (2,506 awards) and 199394 (4,000 awards).

Programs that include support services only

Kentucky's Destination College/Campus Serve

Kentucky's Destination College/Campus Serve program, a six year pilot program operating from 1988 through 1994, was sponsored by the U.S. Department of Education SchoolCollegeUniversity Partnership. Participation in the program increased by 50% over the three year period, rising from 826 in 1988–89 to 1,242 in 1990–91 (Kentucky Council on Higher Education, 1991). The Kentucky Council on Higher Education is in the process of conducting an evaluation to determine the effects of the program on school attendance, high school graduation rates, college enrollment rates, and school grades.

Maryland's College Preparation Intervention Program

Maryland's College Preparation Intervention Program, a three year pilot program, was implemented in five regions around the state and served about 3,450 students during the academic years 1989–90 through 1992–93 (The Institute for Higher Education Policy, 1994b). The Maryland General Assembly appropriated a total of $2.35 million for the College Preparation Intervention Programs: $850,000 in FY 1990, $750,000 in FY 1991, and $750,000 in FY 1992 (The Institute for Higher Education Policy, 1994b). The legislation authorizing the College Preparation Intervention Program specified that, at the end of the three year pilot period, the Commission on Higher Education was to contract for the evaluation of each pilot program.

Since participating students had not graduated from high school at the time of the evaluation, the effectiveness of the pilot programs in terms of preparation for college and college enrollment could not be fully evaluated. The evaluators estimated the effects of program participation on college enrollment and employment readiness by interviewing students, teachers, and parents regarding students' aspirations. Many students reported that the College Preparation Intervention Program increased their awareness about college, influenced them to enroll in college track courses, and made them realize that college was a realistic goal. A survey of students participating in the Southern Maryland pilot program showed that 84% of program participants planned to attend college. A review of course selections indicated that program participation increased the probability of enrolling in college track math and science courses.

New York's Liberty Partnerships Program

More than 11,000 students in grades five through twelve participated in the Liberty Partnership Program during the 1993–94 academic year. About one half (51.6%) were new students (The University of the State of New York, 1994). In 1993–94, 92% of twelfth grade participants had graduated from high school and 68% of these students (819 of 1,199) planned to attend a postsecondary education institution during the following year. The lowest promotion rates among participating students were for those in the ninth grade (59%), the tenth grade (61%), and the eleventh grade (69%).

Counseling, including academic, personal, and career counseling, was the most common type of support service provided during the 1993–94 academic year. Other support services included home visits, referrals for social, career, and health services, tutoring, mentoring, enrichment activities (including cultural, social, and recreational), and special classes. Examples of special classes include study skills and PSAT and SAT preparation.

Primary issues and challenges

Although a full evaluation of these early intervention programs is not possible at this time, issues and challenges facing the success of these programs can be identified. The major issues and challenges include: 1) identifying the appropriate balance between support services and financial benefits; 2) determining the age/grade level of students

to target; 3) identifying other student eligibility requirements; 4) encouraging the involvement of parents; 5) promoting the linkage and coordination of resources; and 6) ensuring the commitment of adequate funding.

Balance between support services and financial benefits

The National Early Intervention Scholarship Program specifies that eligible programs include three components: financial assistance to attend college, academic support services, and programs for increasing college awareness among students and their parents. As described in this paper, not all state level early intervention programs include all three components.

The early intervention programs established in Louisiana, New Mexico, Arkansas, and Georgia seek to motivate students to graduate from high school and enroll in college by attaching academic achievement requirements to scholarship eligibility criteria. While these scholarship programs may increase students' and parents' awareness about and interest in college, it is unclear whether disadvantaged and at risk youth will be able to take advantage of these financial incentives without any supplemental academic support services. In addition, since none of these four programs includes specific components to increase students' awareness about college and financial assistance early in their schooling, it is unclear if students become aware of these scholarship programs in time to influence their educational outcomes.

In their evaluation of Maryland's College Preparation Intervention Program the Institute for Higher Education Policy (1994a) argued that early intervention programs should focus on support services rather than financial assistance. The evaluators concluded that the primary goal of an early intervention program ought to be improving access to education among economically disadvantaged, but academically able, youth by increasing awareness of educational and career opportunities. The second priority ought to be enhancing students' academic performance by urging students to enroll in college track courses and providing the academic support necessary to pass these courses.

Nonetheless, one argument supporting the inclusion of financial incentives in an early intervention program pertains to the trends in the forms of financial aid awarded to postsecondary students. The total amount of financial assistance awarded to students in the form of federal loans greatly exceeds the total amount awarded in the form of federal grants (The College Board, 1994). Consequently, a substantial portion of low income students rely upon loans to finance the costs of their postsecondary education. In 1989–90, 32% of dependent students with family income below $10,000 utilized loans (National Center for Education Statistics, 1993). Although the effects of loans versus grants on college access, choice, and persistence are debatable, loans certainly increase the costs of college attendance in terms of interest costs, origination fees, and insurance fees. Moreover, as Mortenson (1991) has argued, loans may be particularly risky for low income students because these students are less likely to complete their degrees and receive the incomes necessary to repay the loans.

Age and grade level of students to target

An underlying premise of early intervention programs is that support services and financial incentives are provided to at risk youth at a point early enough in their schooling so as to influence educational outcomes. The authorizing legislation for the federal National Early Intervention Scholarship Program specifies that eligible programs are those that ensure that elementary, middle, and secondary school students who are at risk of dropping out of school receive adequate counseling, mentoring, academic support, outreach, and other support services. Each state level early intervention program has its own definition of "early enough."

The programs in Rhode Island and Hawaii enroll third grade students. The "I Had a Dream" Foundation recommends that a sponsor select a class of second or third grade students. Other programs, like Indiana's, Oklahoma's, and North Carolina's, target middle school students. The programs that include financial incentives only (Louisiana, New Mexico, Georgia, and Arkansas) are open to any high school senior or recent high school graduate. New York's Liberty Partnership Program includes activities for students in grades five through twelve.

The grade level of students to target will likely be determined by two issues. The first requires identifying the point that is "early enough" in the course of students' schooling so that academic and other support services can still influence students' motivation and readiness for college. The second issue pertains to the availability of resources. Every additional year of program participation means an additional year of providing services. Ultimately, the

determination as to which grade level of students to target may be resolved by the amount of resources available for support services.

OTHER STUDENT ELIGIBILITY REQUIREMENTS

The "I Have a Dream" Foundation encourages sponsors to select an entire class of students in the second or third grade in which the majority of students come from socioeconomically disadvantaged backgrounds. Similarly, in order to be eligible for federal funding under the National Early Intervention Scholarship Program, a state's early intervention program must target students who meet the eligibility criteria for the Elementary and Secondary Education Act of 1965; the free or reduced meals component of the National School Lunch Act; or Aid to Families with Dependent Children.

Nonetheless, based upon their evaluation of Maryland's College Preparation Intervention Program, the Institute for Higher Education Policy (1994b) recommended that student eligibility be defined in terms of both academic and financial need criteria. Suggested academic criteria include: standardized test scores, grade point average, and recommendations of teachers and counselors.

Future evaluations of early intervention programs ought to examine the issue of which students to target. Given scarce resources, maximizing the effectiveness of programs is crucial. Nonetheless, administrators should avoid targeting early intervention programs toward those who are the "easiest" to serve, merely because these students will produce the most favorable outcomes in the shortest period of time. The truly "at risk" students are likely to be more difficult to serve, and, consequently, the effectiveness of programs targeting these students may be manifested over a longer period of time and may be more difficult to measure.

INVOLVEMENT OF PARENTS

In order to receive funding under the National Early Intervention Scholarship Program, a state program must inform parents about the advantages of postsecondary education and the availability of financial assistance. In order to participate in the programs in Rhode Island and Oklahoma, parents must sign contracts, pledging to provide various types of assistance.

In addition to requiring parents to certify students' applications for enrollment, Indiana's TwentyFirst Century Scholars Program is working to develop other ways of involving parents. The Parents' Project, a pilot program funded by the Lilly Endowment, Inc. and operating at locations throughout the state, is intended to identify methods for promoting parental involvement at home, in schools, and in the community in order to increase students' personal and academic success.

Based upon their evaluation of Maryland's pilot program, the Institute for Higher Education Policy (1994b) concluded that the success of students enrolled in the pilot program was dependent upon parental involvement. Although most parents expressed support for their child's involvement in the College Preparation Intervention Program, program administrators had difficulty persuading parents to participate in program activities. The evaluators speculated that parents' failure to participate may be attributable to the characteristics of the jobs held by these parents of lower socioeconomic status. Specifically, many parents worked hourly jobs, had little flexibility to take time off, and/or worked weekend and evening shifts, and consequently, simply were not able to participate.

Some evidence suggests that activities designed to increase parents' awareness of college and the availability of financial aid, such as college admissions and financial aid workshops, may inform parents that college is not only a realistic goal for their children, but that college is also a realistic possibility for themselves. Based upon their evaluation of Maryland's College Preparation Intervention Program, the Institute for Higher Education Policy (1994b) concluded that, as a result of program activities, some parents were now considering enrolling themselves in college.

LINKAGE AND COORDINATION OF RESOURCES

Several early intervention programs specifically recognize the scarcity of resources, and, therefore, encourage coordination and linkage of early intervention services with existing services and providers. Under the National Early Intervention Scholarship Program, states are encouraged to draw upon the resources of local educational agencies, institutions of higher education, community organizations, and businesses, particularly with regard to the provision of counseling and other support services. As an example, the Rhode Island Children's Crusade for Higher Education

has provided grants for 47 community mentoring programs, involving schools, churches, community agencies and more than 600 volunteer mentors. Under New York's Liberty Partnerships Program, the State Education Department allocates grants to colleges and universities (or consortiums of colleges and universities or other organizations if no college or university in the region applies) for programs that coordinate activities of various local organizations. Indiana's TwentyFirst Century Scholars Program includes formal links to other state and community based programs.

A common feature of the three programs that include only support services is the use of local college students to provide tutoring services. Such collaborations benefit both those being tutored and the college student tutors. College students not only provide necessary academic assistance, but also serve as role models for younger students. College student volunteers receive hands-on teaching experience as well as psychic benefits from assisting members of the community.

Commitment of adequate funding

Clearly the effectiveness of any program depends upon the adequacy of resources. As noted above, the National Early Intervention Scholarship Program has fallen victim to the federal budget deficit. Although Congress appropriated $3.1 million for fiscal year 1995, the U.S. Department of Education requested no funding for fiscal year 1996 and the rescission of fiscal year 1995 funds.

In Oklahoma, scholarships are supposed to be funded from proceeds from the Oklahoma Higher Learning Access Trust Fund. The Trust Fund is to consist of contributions from the state legislature and other public and private sources. No portion of the investment return is to be allocated toward administrative expenses. It is unclear at this time, however, whether the return on the Trust Fund will be sufficient to cover the costs of scholarships. The following warning appears on the front cover of the Oklahoma Higher Learning Access Program's informational pamphlet, as well as on each page of the Program application:

> Legislation to appropriate funds to the Oklahoma Higher Learning Access Program Trust Fund has yet to be passed. Therefore, students' access to Oklahoma Higher Learning Access Program scholarships upon graduation from high school will be subject to the availability of such funds.

Certainly, students and parents must be informed about the possibility that, although they sign the "Contractual Agreement" and participate in program activities, they may not receive a scholarship. But what is the impact of this disclaimer on students' and parents' commitment to the program? Might this lack of commitment on the part of the legislature actually undermine the belief among students, particularly those from lower income backgrounds and groups underrepresented among college students, that their efforts will be rewarded?

The funding structures underlying the early intervention programs in two states, Rhode Island and Georgia, will help secure the future of their early intervention programs. Unlike the other early intervention programs identified in this study, the Rhode Island Children's Crusade for Higher Education is funded via a combination of state, federal, college and university, business and industry, union, and foundation contributions. Tuition assistance will also be provided by postsecondary institutions that agree to allocate scholarships to program participants. The amount of each scholarship is limited to instate tuition costs at The University of Rhode Island. To date, the Children's Crusade Scholarship Collaborative has received more than $43 million in scholarship pledges from 36 colleges and universities, including Harvard, Brown, Smith, Stillman, Pomona, and the University of Rhode Island, as well as eight trade and technical schools. The Children's Crusade for Higher Education's cash scholarship fund stands at $4.33 million (1994–95 Fact Sheet).

With the endorsement of Governor Zell Miller, in November 1992 Georgia passed a state constitutional amendment permitting the establishment of 27 scratch-off and online gambling games. According to Georgia state law (§50-27-1 et seq. O.C.G.A.), three newly established education programs receive state lottery proceeds: Helping Outstanding Pupils Educationally (HOPE), Voluntary PreKindergarten for Four Year Olds, and capital improvements for education. The law requires that lottery funds "supplement, not supplant, existing resources."

Implications and conclusions

Despite more than thirty years of financial assistance to students, certain groups, particularly blacks, Hispanics, and students from low income backgrounds, continue to be underrepresented in higher education. By supplementing

financial incentives with support services and college awareness activities, early intervention programs may effectively motivate students to pursue postsecondary education and provide students with the preparation necessary to succeed in college. Consequently, early intervention programs have the potential to increase high school graduation and college enrollment rates among at risk youth.

Future evaluations of early intervention programs ought to focus on answering the following questions. First, what "package" of incentives and services is most effective in accomplishing these goals? In other words, what is the appropriate balance between financial incentives, support services, and college awareness activities? Second, at what grade level should students initially become involved in early intervention programs? In the context of current budget constraints, a more practical question might be, what is the highest grade level in which students can be enrolled in an early intervention program and still benefit? Third, which students should early intervention programs target? Should eligibility criteria focus on financial need and other risk factors only, or should students exhibit some level of academic ability, as recommended by the Institute for Higher Education Policy? Fourth, what role can parents play in the success of early intervention programs and how can administrators encourage parents to become involved? Fifth, how can early intervention program activities leverage the resources and services currently available to maximize the benefits? Sixth and perhaps most important, how can an adequate level of funding for early intervention programs be sustained?

Early intervention programs can be expensive in terms of both support services costs and scholarship awards. The cost of support services may be mitigated by coordinating program activities with the services currently provided by organizations and volunteers within the community. Projecting the costs of scholarship awards is problematic, given possible variations in program participation and eligibility rates, as well as escalating trends in college costs. Nonetheless, ensuring adequate funding for these programs must be a priority. Shortfalls in funding will likely result in smaller average awards to eligible students, and, as a result, may reduce at risk students' motivation for and predisposition toward college. Therefore, insufficient or unstable funding may diminish the effectiveness of these programs among the students the programs are designed to serve.

Notes

[1] Since the New Mexico Early Intervention Scholarship Program was initiated in October 1994, the New Mexico Commission on Higher Education no longer considers the New Mexico Scholars Program to be an early intervention program. The New Mexico Early Intervention Scholarship Program, one of the six programs funded under the National Early Intervention Scholarship Program, is designed to provide support services and college awareness activities to socioeconomically disadvantaged students and their parents beginning in the 5th grade. Nonetheless, the future of the New Mexico Early Intervention Scholarship Program is in jeopardy, given the uncertainty of continued appropriations for the National Early Intervention Scholarship Program.

[2] Maryland received funding under the National Early Intervention Scholarship Program to build upon the pilot program initiatives.

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2

Key program elements

Early Education Awareness Activities:

Interventions That Make Postsecondary Education a Viable Goal

Dr. Ann S. Coles
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There are many horizon broadening activities that middle schools can use to encourage students to believe in themselves, dream and set future goals are interventions that make postsecondary education a viable option. The importance of postsecondary education is well-documented in studies of labor market trends and future job projections. It is estimated 65 to 75 percent of all new jobs in the future will require education beyond high school. Rapid technological development and growing pressure of international competition will require workers to have computer literacy, analytical thinking skills, and well developed problem-solving abilities. Postsecondary education also is important for people's financial security. The likelihood of being poor falls sharply as education attainment rises. In Massachusetts, for instance, only 2.5 percent of people with Bachelors degrees are poor as compared with 35 percent of people with 12 years or less education.

Intervention designed to enable students to view postsecondary education as a viable goal are referred to as "early educational awareness" activities. This concept evolved in the early 1980's through efforts to address the problem of declining minority enrollments in higher education. College officials seeking to recruit traditionally underrepresented populations discovered that many such students had not prepared for postsecondary education because they were unaware of opportunities or the availability of financial aid.

Initially early awareness activities targeted tenth and eleventh grade students. Volunteers from the higher education community organized and conducted activities held in school and community settings. Activities included practice SAT test administrations, test preparation workshops, college fairs, and workshops on college admission and financial aid processes. High school counselors assisted with planning activities, and identifying students to participate. People involved soon realized that such activities would have greater impact on postsecondary attendance if they reached students in earlier grades, and they began shifting attention to middle school students.

At the same time, research emerged documenting the importance of parents' expectations on the students' future plans. These findings suggest that parents as well as students need early awareness activities if student behavior regarding postsecondary education is to be influenced. As a consequence, middle school early awareness activities include parents to a greater extent than had been the case previously. With the expansion of early awareness activities to middle school students, there also came changes in content end design, reflecting difference in the motivation of younger adolescents as well as in their information and developmental needs.

Purpose of early awareness activities

The primary purpose of early awareness activities is to enable middle school students and parents to understanding that postsecondary education is a significant opportunity and an attainable goal if they choose it, providing they plan ahead and prepare academically.

Early awareness activities make explicit the importance of education for future career and life goals. Students and parents need to understand that most jobs that pay enough to afford a middle class lifestyle today require education beyond high school. For many parents, this represents a change from the workforce they entered after high school when manufacturing jobs were plentiful.

For many students and parents, understanding that postsecondary education is an attainable goal, involves dispelling misconceptions they hold. Particularly in families where the parents are not college graduates, such misconceptions are common.

- "College costs too much; we can't afford it." Much of people's knowledge of postsecondary education is based on media reports about college costs. Recent polls have found that most students and parents think that college costs three times as much as it actually does. They tend to see all postsecondary institutions as very expensive, without making distinctions among elite private colleges, four-year public or community colleges. They also do not realize that billions of public financial aid dollars are available.

- "College isn't worth it. A person can make just as much with a high school diploma." Many people do not realize that a college graduate earns an average of $1 million more during a lifetime than someone who does not go to college.

- "Because I haven't done well in school, I'm not smart enough to go to college." Students and parents are unfamiliar with the variety of postsecondary opportunities, making it possible for anyone to pursue education beyond high school. They also do not know that many schools offer tutors, writing centers, study skills courses and other assistance for students who need academic help.

- "I don't like school. I'll be lucky to make it through high school; I couldn't stand another four years after that." Students and parents often do not understand the differences between middle school or high school and postsecondary education. They need to know that most postsecondary programs are less structured and offer students many more choices than high school.

- "I can't go to college because I need to support myself when I finish high school." Again, students and parents are unaware that working does not preclude postsecondary education. They need to know about part-time study opportunities, cooperative education and other possibilities for combining work and study.

Part of the purpose of early awareness activities is to make parents and students aware of the ways in which choices they make now regard academic programs and how free time is spent can either expand or limit future options.

Academic choices affecting students' future options involve understanding the differences among middle and high school programs. Whether or not programs are designed to prepare students for advanced math and science courses, to develop critical thinking skills, to qualify them for honors or advance placement courses have a direct bearing on what students are prepared to do after high school. Many students and parents also need to understand that the courses which prepare students for postsecondary education often are required for high school graduates to compete successfully for jobs, or even enter the armed services.

Free time choices relate to how students spend their time after school and during the summer. The choices students and parents make about how free time is spent are not necessarily conscious decisions. Often students drift into activities with friends or work at unrewarding jobs because they do not know what else to do. Many students are unaware of the extent to which free time activities influence their future options. They do not realize the opportunities that extra-curricular activities, sports and other activities provide to build confidence and explore now interests.

Early awareness activities make students and parents aware of what they must do now to prepare for postsecondary education and where they can get help with planning. They provide students and parents with an understanding what courses students must take in middle school and high school in order to meet admission requirements. They also give families a general understanding of postsecondary costs and how to begin preparing for these costs.

Why middle school students need early awareness activities

Middle school students need early educational awareness activities in order to develop their postsecondary "consciousness". Developing postsecondary consciousness means enabling students to incorporate into their beliefs about themselves the idea that education beyond high school is a realistic option, something they want to do, think will benefit them, and believe they can undertake successfully.

Key program elements

To internalize beliefs regarding postsecondary education, middle school students need repeated exposure to the tangible reward of furthering their education and to people with whom they can identify who have benefited from postsecondary education. Exposure to the benefits of postsecondary education involves learning about different careers, the opportunities they afford and the educational preparation required. It includes students becoming acquainted with college graduates and undergraduates from backgrounds similar to theirs, and learning how they have overcome obstacles and achieved educational goals. The ways in which financial aid makes it possible for people to pursue postsecondary education regardless of their family's financial circumstances needs to be noted specifically.

Another way to instill beliefs about further education is for students to have positive interactions with teachers and other middle school staff they see on a daily basis that reinforce the possibilities of postsecondary education. Interactions can range from class presentations about experiences in college to casual conversations initiated by school staff about where (not if) students plan to further their education after high school.

Building expectations about future education also should involve giving students firsthand experiences on campuses. Visiting college classes and dormitories, eating in the student union, or attending a basketball game spark students' imagination regarding themselves as college students. They develop a realistic picture of college, and begin to envision themselves as college students and the ways in which they would enjoy campus life.

To internalize beliefs that they can continue their education beyond high school, students need affirmation from adults and pears whom they respect that they have the potential to achieve this goal. Students need to hear that they are smart, and that postsecondary education will make it possible for them to do things which otherwise would not be possible. Students also need to know that others believe they will be successful on the postsecondary level and will support their educational aspirations.

Another reason middle school students need early awareness activities is to counter messages from peers, parents and adults who may discourage them from going to college. Such messages come from people who are skeptical about the value of postsecondary education, or who believe that the student does not have the ability or the drive to achieve this goal. In some cases, messages come from parents who have expectations that postsecondary education would preclude, such as the desire for the student to go to work to help support the family. Whatever the reason, negative messages from family members, teachers, peers and others can strongly influence the thinking of adolescents. Early awareness activities can counter these influences and provide students with support to consider postsecondary education.

Students also need early awareness activities to counter negative messages they receive from the media regarding future options. Entertainment superstars who are overnight successes and public interest in state lotteries foster the belief that in students that life is controlled by external forces over which they exercise little influence. Other media messages, which distract students from long-term goals, are those conveyed through advertising for alcohol, tobacco, cars and personal products that dramatically focus attention on the immediate rewards of fulfilling consumer desires.

Early awareness activities can counter the sense among youth that there is nothing worth working toward in the future. Environmental problems, the threat of nuclear disaster, the prevalence of drugs and crime, and the possibility of an AIDs epidemic leave many middle school students with the impression that the world holds no future. Through early awareness activities, students can be made aware of the possibilities for them to participate in solutions to societal problems and preserve the world for their generation.

Another function served by early awareness activities is to foster middle school students' motivation to start preparing now for future options. When students believe that postsecondary education is both an attainable goal and the best way for them to have the adult lifestyle they would like, they become interested in planning for the immediate future. They are more willing to think seriously about what courses they need to take next year and to look for new experiences that will prepare them for long-term goals.

Why parents need early awareness activities

It is essential that parents be involved in early awareness activities if the activities are to have the desired impact of developing students' interest in pursuing postsecondary education. There is considerable research showing that family involvement in school dramatically improves the academic performance of students who previously have not done

well. Parental involvement in school also raises the expectations they have for their children's education. Research also has documented that parental preference is the most important factor in children's plans for postsecondary education. This is true for all students regardless of family income or racial/ethnic group. Parents who are not predisposed toward their children pursuing postsecondary education need early awareness activities to convince them of the importance of postsecondary education for their children.

Early awareness activities for parents also are needed because of the importance of families to begin planning early to meet college costs. With tuition rising at twice the inflation rate, it is essential for families to plan how they will manage such costs.

Information to be conveyed through early awareness activities

Early educational awareness activities for middle school students and parents cover a broad array of topics.

Career and Labor Market Information: This topic includes information about the financial payoff of a college degree over a lifetime, jobs of the future, and the importance of postsecondary education as prerequisite for the majority of future jobs.

Postsecondary Program: This topic encompasses types of postsecondary programs, the differences between degree and certificate programs, and liberal arts education and career training. The general criteria to be considered in choosing a college, admissions requirement and the admissions process also should be described.

Paying for Postsecondary Education: Under this topic comes information about educational costs and how families can meet them. Types of financial aid, who is eligible and how financial aid is awarded should be included. The basis on which colleges determine the amount they expect families to contribute toward their children's education should be explored as well as the concepts of needbased and merit based aid. Students and parents should be made aware of the differences between educational and consumer loans and alerted to the likelihood that they will have to borrow to meet educational costs.

Early Financial Planning: This topic includes what steps families of middle school students can take to begin planning for college costs. Immediate steps include learning about financial aid, investigating savings and investment options, and developing a savings plan appropriate for a family's income. Specific information on various investment/savings tools needs to be provided, including Series EE savings bonds which are tax free if used for postsecondary purposes, state-sponsored tuition guarantee programs and education IRA's. Parents need repeated reassurance that sufficient financial aid exists to make college a realistic goal for even low-income students.

Prerequisites for Postsecondary Education: This topic encompasses the courses students need to take in middle school to prepare for postsecondary education the difference among general, vocational, and academic high school programs and the high school courses students to meet admission requirements. Information about admissions tests and how to prepare for them should be included. Information also should be provided on extra-curricular activities that will prepare students for postsecondary education. Activities such as clubs, sports, community service projects, cultural enrichment programs and travel provide opportunities for students to explore interests, develop special talents and build self confidence. The fact that many activities provide financial assistance to make it possible for low income students to participate should be noted. The ways in which summer and part-time employment can be used to enhance future options also needs to be discussed.

Role of Parents: This topic includes the various ways in which parents support their children's education aspirations, and can assist children with planning for future options. The importance of talking with children about the value of education, providing a quiet place for children to do homework, encouraging children to try new challenges, and taking pride in children's educational accomplishments needs to be discussed. Parents also need to be encouraged to call their children's teachers and guidance counselors with questions, and given suggestions regarding questions they might want to ask.

Decision-Making: Information needs to be provided on the decision-making process. Because of the importance of postsecondary education, the decisions students make regarding postsecondary education be well-informed. Often people do not make informed decisions simply because they do not understand the process by which to do so. The

steps involved in effective decision-making need to be explained, and parents and students may need to be given some assistance with applying these steps to their own situations.

Sources of Assistance with Planning for Postsecondary Education: This topic covers the people and places from which students and parents can receive assistance with planning. Extended family members, teachers, counselors, clergy, and employers can provide valuable assistance.

Public libraries and community education agencies are readily accessible information sources. Community-based telephone hotlines provide many people with assistance on referrals to sources of help. Admissions and financial aid offices also are important sources of information.

In planning early awareness activities for middle school students, the developmental needs of early adolescents need to be considered. Those include the need for activity-based experiences, self-exploration, adult-reinforcement, and a sense of belonging to a group. Successful early awareness activities are responsive to such needs.

Research on the kinds of early awareness activities middle school students and parents say they are interested in participating also should be considered. A recent study found that middle school students who consider themselves education bound beyond high school are willing to participate in a broad array of activities, including those traditionally offered to eleventh and twelfth graders. Students who identify themselves as vocation-bound are less interested in such activities, particularly those that involve reading material on postsecondary education and financial aid, seeking information and advice from teachers and counselors, and special events such as college fairs and career days. Vocation-bound students do express willingness to use computerized guidance programs and other videos to learn more about postsecondary opportunities.

Research on middle school parents indicates a much higher level of interest in information about postsecondary planning than is found among middle school students. In one study, more than three fourths of all parents said they would be willing to participate in various early awareness activities as compared with just under half of all middle school students. Nine out of ten parents expressed interest in encouraging their children to spend more time studying to improve their grades, talking with their children about plans for education after high school, and exploring with their children the jobs they might be able to get after completing college. In addition, slightly more than three fourths of the parents said they would be interested in listening to a talk on financial aid; attending a college night; talking with teachers or counselors about the courses students need to take to prepare for college; helping their children find an after school or summer job to help earn money for education, and attending a school sponsored career day. These findings underscore the importance of involving parents in early awareness activities if such activities are to be successful in increasing the postsecondary participation rates of students.

Early awareness activities for middle school students have been implemented successfully in communities throughout the United States. While most activities are open to all students, they are targeted to students from families with no previous postsecondary experience. In some cases, programs are restricted to students who need exposure and enrichment in order to be motivated to prepare for postsecondary education. Most early awareness activities involve collaboration between middle schools and outside groups. While colleges, universities and other higher education agencies are the most frequent collaborators, corporations and service organizations also have made major contributions, providing volunteers and financial support. Activities are classroom-based, school-wide and district-wide. They also take place on college campuses. The costs of activities vary ranging from little to substantial, depending on the activity. Almost without exception, activities are free to students and parents with the costs borne by school districts, postsecondary institutions, state and federal governments, and the private sector.

Classroom activities

Early awareness activities that take place in the classroom setting generally fall into three categories: career/educational planning workshops; teachers as role models/advisors; and weekly group guidance sessions incorporated into classes.

Workshops combining education and career information have as their goal enabling students to understand the relationship between career success and college as well as various career options and the educational preparation needed for careers. They also include information about financial aid and high school course selection. Workshops

usually are conducted by volunteers from area colleges and businesses, preferably adults who are college graduates and from background similar to those of the students to whom they are speaking. Graduates of the middle school who are now attending college also serve as presenters. In some cases, the volunteers conduct exercises designed to actively engage students in thinking about the relationship between their future dreams and postsecondary education. In other instances, the volunteers share personal experiences — what kinds of families they came from, how they did in high school, what influenced their decision-making and how they overcome obstacles in order to achieve their present positions. The most successful workshops are those with presenters who can quickly establish rapport with early adolescents, and those in which students have plenty of opportunity to interact with the volunteers and each other. Most workshops include handouts for students with information on the courses they need to take in high school, particular careers and financial aid.

Classroom teachers serving as role models and advisors regarding postsecondary education play a significant role in developing students' educational awareness. By sharing their college experiences and talking informally with students about plans for furthering their education, teachers can, over time, successfully cultivate the notion of postsecondary education as a realistic goal. Because they see students on a daily basis and have detailed knowledge of their individual strengths, teachers also are important advisors for students regarding the courses they should take in middle school and high school to prepare for postsecondary education. Such advice can be conveyed to students alone or, preferably, in conferences with students and their parents.

A third type of classroom early awareness activities is the weekly group guidance session. These sessions are incorporated into classrooms and are team taught by the teacher and a guidance counselor. The sessions include exploration of personal values and goals, career interests tests, and discussions of future options. Students have homework assignments on these topics to reinforce learning and serve as the basis for future discussion.

School-wide activities

Early awareness activities provided on a school-wide basis involve all the students in a particular grade, if not the entire school. Activities include early identification programs, mentoring, parent activities, special events, extracurricular activities, and enhancements of the school's guidance office.

Early identification programs involve students with postsecondary potential who, without special attention, would be unlikely to finish high school or further their education. Students are identified using standardized test scores, grades, and by teachers, counselors and other staff who have observed their potential. Once identified, students participate in various activities to nurture their educational aspirations, talents, and motivations. Activities include special letters to parents about their children's potential and what they can do to support the child's development, outreach by teachers and counselors to encourage students participation in early awareness activities, and referrals to special after school and summer enrichment programs.

Probably the most widely used activity for supporting students with academic potential identified as "at-risk" of not completing high school are mentoring programs. Mentoring programs consist of volunteers from businesses, service organizations, area colleges, or high schools who provide one or two students guidance and support regarding their planning for future goals. While it is preferable that mentors be from backgrounds similar to the students with whom they are paired, there have been many successfully mentors whose backgrounds differ from the students assigned to them. Effective mentoring programs require coordination, training of mentors, and communication with students' families to ensure that they both understand the goal of the mentor relationship and trust the individual to whom their child is assigned. Mentoring activities very depending on the interests and needs of the students and the mentor. They include weekly or monthly meetings, regular telephone contact, career exploration, college visits, and cultural activities. Sometimes mentors serve as advocates for students when problems arise that interfere with their school participation. There also are occasional group activities, including achievement breakfasts and special occasions to which parents are invited.

School-wide early awareness activities for parents consist primarily of workshops on helping children plan for future education. Workshops include information about postsecondary options, financial aid, the courses students need to take in high school, and how parents can support their children's aspirations. Schools take special steps in order to encourage parental participation in workshops. They mail personal invitations home, written in the parents' first language. They schedule workshops at convenient times for working parents, and provide refreshments and, in some

Key program elements

cases, transportation. Frequently, the focus of parent workshops has been a 20 minute video, "Paving the Way", developed for middle school parents regarding planning for postsecondary education. Handouts on the topics covered in the workshop are provided where possible. In some cases students participate in parent workshops.

Other early awareness activities for parents include early financial planning workshops, information in PTO newsletters, and parent telephone support networks. Early financial planning workshops address issues related to financing higher education and provide information on financial aid and education savings vehicles. Such workshops are most relevant to middle income families who have the financial resources to begin saving early for college expenses. Telephone support networks usually are organized by parent organizations to link parents who have experience with postsecondary education with parents who are unfamiliar with how to help their children plan for college. The experienced parents serve as resource people for the inexperienced parents using the telephone as the primary communication vehicle.

Examples of special school-wide events related to early awareness are college awareness weeks and practice taking the Preliminary Scholastic Aptitude Test (PSAT). College awareness weeks involve various activities to engage students' interest in postsecondary education. School staff bring in college memorabilia and wear clothes with the name of the college from which they graduated. Art classes make banners of teachers' alma maters to hang in classrooms. Teachers spend five minutes at the beginning of each class sharing a college experience. A letter is sent to parents explaining college awareness week and asking if they or a family friend can lend students college memorabilia to wear or bring to school. Each morning during homeroom period a counselor describes a local college over the public address system without naming it. Classes are asked to guess the mystery college, and the winners receive souvenirs from that college as prizes. Book covers from local colleges are distributed to all students. Throughout the day in the halls school staff ask students, "Where do you think you might go to college?" There also are school assemblies featuring presidents from local colleges.

Giving the PSAT for practice on a school-wide basis provides the opportunity for every interested eighth grader to take this test. If students cannot afford to, the test administration fees are subsidized by a parent organization or the school system. After taking the test, students participate in follow-up activities. They write about what it was like to take the test. They review their test scores with a teacher, and discuss those questions which they got wrong and how they can prepare for standardized tests in the future. They also participate in workshops on test-taking strategies.

The primary extracurricular activity serving as a vehicle for early awareness is the "College Club". Similar to other student organizations focussing on what students will do in the future, College Club activities consist of monthly meetings with motivational speakers, trips to local campuses, videos related to educational planning and general discussions about what to expect in college and how to prepare for it. Advisors for the College Club are either a teacher or a volunteer from a local postsecondary institution.

Guidance office enhancements include additional information resources and structural changes. Many schools have incorporated computerized guidance systems and Internet access into their guidance office as a means of promoting early awareness. Since postsecondary information systems are designed for students in the upper high school years, they are not as relevant to the immediate needs of middle school students. Several pre-college guidance software systems for middle school students have been developed by national organizations. A relatively easy enhancement middle school guidance offices involve the development of an early educational awareness video lending library. Such a library consists of videos of colleges, careers, and educational and financial planning that students and parents can borrow to view at home.

In addition to using technology to enhance guidance offices, a few schools have significantly improved their capacity to provide early awareness activities by designating a counselor as the "college information counselor". The college information counselor is responsible for: organizing and maintaining postsecondary information materials; disseminating information about postsecondary opportunities to teachers, other counselors, students and parents; helping students choose courses which will meet college admission requirements, providing students and parents with information about financial aid, coordinating early awareness activities; and referring students to summer enrichment programs. In some cases, the college information counselor is assisted by a graduate student intern with specific responsibility for organizing early awareness activities.

System-wide activities

System-wide activities refer to those early awareness activities offered to middle school students throughout a school district. They include parent activities, special events, and financial incentives, and they are organized either by the school district office or an outside organization working closely with district administrators.

System-wide activities for parents include letters from mayors or other distinguished public officials talking about the importance of postsecondary education for their children's future opportunities and asking them to encourage their children's educational aspirations. School districts also produce newsletters with information about postsecondary planning which are sent to parents on a regular basis. There also are short publications for parents produced either by school systems or higher education organizations that cover various aspects of early planning for future education. In some instances, these publications have been translated into the parents' first language. Another type of system-wide activities for parents are the workshops describe previously which are held at individual middle schools but planned and publicized by the district administration.

Special system-wide events encompass activities held at a central location that are open to students and parents through the school district. Some are college fairs similar to those traditionally held for high school juniors and seniors. Others combine career and postsecondary information with representatives of schools and employers available to most with students and parents. Occasionally there also are fairs tailored specifically to the developmental needs of middle school students. One example is an event called College Pursuit. Based on the game of a similar name, College Pursuit involves postsecondary institutions each setting up a hands-on activity to demonstrate a particular aspect of the educational programs they offer. Students play the "game" using a game card which is stamped by the postsecondary representative when the student finishes each activity. Students who complete the game card are rewarded with door prizes and refreshments. Another event targeted to middle school students is the high school fair at which students can talk with representatives of the various high schools in the school district from which they can choose. Parents are invited to attend most system-wide special events day with their children.

In addition to organizing specific early awareness activities, some school systems have taken a comprehensive approach to addressing the goals of early awareness activities. These systems have put into place a college guidance curriculum for grades 7 through 12. This curriculum consists of a sequence of activities that incorporate the developmental needs of students through early and middle adolescents and the different decisions they need to make along the way. The goals of the curriculum include building students self-esteem, broadening their horizons, raising educational aspirations, and preparing students to make informed decisions about their futures. The curriculum is integrated with the academic curriculum, and the head counselor in each school is responsible for implementing early awareness activities for both students and parents are an important component of the guidance curriculum.

Campus-based activities

Campus-based early awareness activities are those taking place primarily on college campuses, or which college planning plays a major role in organizing and supporting. They include campus tours, educational and cultural enrichment programs, and tuition guarantees. Often these activities are combined with some of the activities previously described such as mentoring and special events.

Campus visits bring middle school students to campuses for a day or overnight. The most common approach to campus visits involves the provision of general information about financial aid programs, what the postsecondary experience is like, and the preparation needed. Another approach is to focus on specific careers. For example, students come to a campus for a day of hands-on activities exposing them to various science careers. Campus visits always include tours of facilities, the opportunity to talk with students, a meal on campus. Sometimes students also spend a night in a dormitory. Visits usually are organized by college admissions offices. Student organizations such as minority student groups and student governments often are involved, helping plan activities and hosting the middle school students. Many campus visit programs include follow-up activities once students return to their school: class assignments, writing articles for the school newspaper, and sharing the experience with younger students.

Educational and cultural enrichment programs are early awareness activities the encompass building academic skills, motivation and self-confidence. They usually are organized and sponsored by a postsecondary institution. They take place over a sustained period of time — months or years — and often involve a summer residential component of one to four weeks. Some educational enrichment programs are generic in their approach, providing basic informa-

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tion and skill building related to all forms of postsecondary education. Others have a special focus such as preparing students for careers requiring mathematics and science backgrounds. Specific activities include classes, "constructive play" activities, mentoring, field trips to work-sites, Saturday science labs, tutoring and guidance. There also are special events to make parents aware of their children's achievements in the program. Programs are managed by the sponsoring institution with a classroom teacher at the schools from which the students come sending a liaison.

The financial incentives offered by postsecondary institutions as part of early awareness efforts consist of tuition guarantees linked to academic achievement. These programs are based on the assumption that guaranteeing tuition scholarships to students in middle school will motivate students to undertake a college preparatory program in high school who otherwise might not do so. Incentives may be offered to all students in a school district, a particular grade, or to a specifically defined group such as underachievers with academic potential identified by school staff as needing special support.

In one instance, students and their families agree to meet specific standards: enroll in and graduate from a college preparation program, maintain a B average, and score at a certain level or better on a standardized admission test. For students who meet these standards, the college pledges admission and agrees to meet the students' full financial need. Such programs also include mentoring, tutoring, campus visits, and, in some cases, a residential summer experience.

In another instance, each year a community college mails every eighth grade student in its district "Possible Dream" certificates inscribed with their own names. The certificates are redeemable for two years of postsecondary education even if the tuition increases over the next five years. The only obligation of the students' families is to deposit $10.00 a month into a college saving account until the student graduates from high school. This money along with a contribution from the college is invested for the student. Families may withdraw at any time from the program for a $25.00 bookkeeping fee. Campus visits and counseling are provided to all students participating in the program.

Questions related to cost and effectiveness frequently arise in considerations of early awareness activities. As an aid to schools in planning early awareness activities, the table on the next page summarizes the activities described here by cost. A school does not have to have substantial financial resources in order to organize and implement early awareness activities. On the other hand, significant funds make it possible for early awareness activities to be more varied and sustained.

Table 1
Cost/effectiveness of early awareness activities

	Little/None	Modest	Substantial
Classroom	Classroom workshops	Paper/pencil career interest surveys	Teacher role models/advisors
School-wide	Early identification/ follow-up of students. Parent telephone support networks College awareness week College clubs Postsecondary education information counselor	Mentoring programs Parent workshops PSAT test administration Educational planning video lending library	Computerized guidance systems
System-wide	Letters to parents from public figures High school fairs	Parent newsletters and publications College/career fairs postsecondary education guidance curriculum	
Campus-Based		Campus visits	Educational enrichment programs Guaranteed tuition/scholarship programs

Related to the cost of early awareness programs is the question of who pays for them. Because of the widespread recognition of the importance of early awareness, particularly for low-income and minority students, there are various funding sources to which public schools can turn for support. Often support takes the form of in-kind contributions rather than cash. Postsecondary institutions and higher educational agencies often are willing to use their own funds to support staff members to organize and conduct activities and develop publications. Postsecondary institutions also assume the costs of campus visits with the exception of bus transportation. In addition, postsecondary institutions often have access to public and private sources of grant funding for educational enrichment programs. Grants from federal and state government agencies are primary sources of funds for educational enrichment programs. Another common source of funding are local corporations, particularly those paired with middle schools as partners. Again, corporations are more apt to provide in-kind support, printing, refreshments, meeting facilities, but they also underwrite costs of buses for campus visits and parent workshops. Self-interest is an important factor motivating postsecondary institutions and corporations to support early awareness programs. They need students to maintain their enrollments, and education workers to fill managerial and technical jobs. For this reason, school administrators should not hesitate to approach the sources for support for early awareness programs.

The question of the effectiveness of early awareness activities is difficult to answer. The success of activities has been documented in terms of what students like and don't like about them, how much they know before and after their participation, and whether more students made the transition from middle school to high school than would have otherwise. There is almost no data regarding the extent to which participation in such activities results in students actually attending college in greater numbers than students who don't participate. A few programs have initiated studies to follow students who participate in early awareness activities from eighth grade through high school graduation. Studies of this sort are critical if financial support for early awareness programs is to be continued or increased in the future. Evaluation studies also are needed to determine kinds of early awareness activities that produce the best results in terms of increased postsecondary enrollment.

Recommendations for implementing early awareness activities

Following are some recommendations for developing early awareness activities for middle school students. These recommendations are based on a national review of early awareness activities by the Higher Education Information Center in Boston, Massachusetts.

1. **Be prepared.** Do not rush into a project without careful preparation. Early awareness programs often deal with "at risk" students who can be easily discouraged and hurt.

2. **Be Organized.** Programs, especially large ones, need tight organization. It is helpful to give coordinators the necessary time, materials and reimbursement for their efforts.

3. **Evaluate.** Build long and short term evaluations into the program. Use specific criteria in the process.

4. **Use Existing Resources.** Do not waste time in "reinventing the wheel."

5. **Listen and Help.** Consult parents, students, school counselors, community groups on what they want and how they want to receive it. Act as a catalyst and facilitator. Involve others in the significant work of the program.

6. **Reach Parents.** Recognize the importance of the parents' attitude toward higher education. Develop materials and programs to help parents help their children.

7. **Reach the Principal.** Enlist the support of the school principal to make programs work.

8. **Involve Teachers.** They can deliver the early awareness message in their classrooms.

9. **Use Peers.** They can serve as convincing role models for success. They act as mentors and/or tutors in early awareness programs.

10. **Be Democratic.** In school-college partnerships make sure that all partners fool equal.

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11. **Be Persistent.** Early awareness programs require long-term, dedicated effort.

12. **Be Playful.** Creative play is a good approach to motivate middle school youth towards effective study and interest in higher education.

Involving parents in early awareness activities

Because of the importance of involving parents in early awareness activities, suggestions for ways in which to encourage their participation are offered below. These suggestions are drawn from the experiences of educators throughout the country who are particularly concerned with involving parents of at-risk youth.

1. Assume that all parents are interested in their children and in finding ways to help them achieve.

2. Provide diverse roles for parents to be involved:
   - parents as recipients and providers of information.
   - parents as supporters of their children's educational endeavors.
   - parents as advisors for their children.

3. Establish partnerships with community organizations to reach parents who don't have time to participate in school programs or who have difficulty coming to school because they lack child care or transportation. Partnerships can be used for:
   - Home visits in collaboration with community leaders, clergy, or social workers.
   - Provide information to parents at their workplace, at healthcare centers or public assistance agencies.
   - Hold early awareness workshops at churches, community centers, and neighborhood organizations.

4. Convey early awareness information through local radio stations and community cable television programs targeting parents, youths and ethnic communities.
5. Use the telephone to call parents on a regular basis with information about academic progress, strengths, and accomplishments, as well as invitations to upcoming school functions. Use conference calls with translators to communicate with parents who do not speak English.

6. Provide invitations, handouts, and workshop presentations in the parents' first language. Communicate information in ways which reflect understanding and sensitivity to cultural differences, particularly as such differences affect the parents' expectations for their children and perceptions of schools.

7. Assign a guidance counselor responsibility for working with parents, particularly parents of those students identified as at risk or not completing high school.

8. Employ a parent liaison for each school to coordinate parental involvement and outreach.

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Why Do Parents Become Involved in Their Children's Education?

Kathleen V. Hoover-Dempsey and Howard M. Sandler
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This article reviews psychological theory and research critical to understanding why parents become involved in their children's elementary and secondary education. Three major constructs are believed to be central to parents' basic involvement decisions. First, parents' role construction defines parents' beliefs about what they are supposed to do in their children's education and appears to establish the basic range of activities that parents construe as important, necessary, and permissible for their own actions with and on behalf of children. Second, parents' sense of efficacy for helping their children succeed in school focuses on the extent to which parents believe that through their involvement they can exert positive influence on their children's educational outcomes. Third, general invitations, demands, and opportunities for involvement refer to parents' perceptions that the child and school want them to be involved. Hypotheses concerning the functioning of the three constructs in an additive model are suggested, as are implications for research and practice. Overall, the review suggests that even well-designed school programs inviting involvement will meet with only limited success if they do not address issues of parental role construction and parental sense of efficacy for helping children succeed in school.

Parental involvement in education has long been a topic of interest among those concerned with optimal developmental and educational outcomes for preschool and elementary school children. With increasing frequency, issues related to parental involvement have also been examined with reference to adolescent outcomes. Across a range of studies, there has emerged a strong conclusion that parental involvement in child and adolescent education generally benefits children's learning and school success (e.g.,.Chavkin, 1993; Eccles & Harold, 1993; Epstein, 1989, 1991, 1994; Hess & Holloway, 1984; Hobbs et al., 1984; U.S. Department of Education, 1994)) Recent work describing the correlates and forms of parental involvement, as well as teacher and school influences on involvement, has been an important part of the current effort to understand why parents choose to become involved and why their involvement often functions to create positive outcomes for their children of all ages (e.g., Eccles & Harold, 1993, 1994; Hoover-Dempsey & Sandler, 1995).

Figure 1
Model of the parental involvement process

Level 5	Child/student outcomes		
	Skills & knowledge		
	Personal sense of efficacy for doing well in school		
Level 4	Tempering/mediating variables		
	Parent's use of developmentally appropriate involvement strategies	Fit between parents' involvement actions & school expectations	
Level 3	Mechanisms through which parental Involvement influences child outcomes		
	Modeling	Reinforcement	Instruction
Level 2	Parent's choice of involvement forms, influenced by		
	Specific domains of parent's skill & knowledge	Mix of demands on total parental time and energy (family, employment)	Specific invitations & demands for involvement from child & school
Level 1	Parent's basic involvement decision, influenced by		
	Parent's construction of the parental role	Parent's sense of efficacy for helping her/his children succeed in school	General invitations & demand for involvement from child & school

Note. From "Parental Involvement in Children's Education: Why Does It Make a Difference?," by K. V. Hoover-Dempsey and H. M. Sandler, 1995, *Teachers College Record*, 95, p. 327. Copyright 1995 by the President and Trustees of Teachers College. Adapted with permission.

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Hoover-Dempsey and Sandler (1995) suggested that specific variables create patterns of influence at critical points in the parental involvement process. Their model includes parents' choices of involvement forms, major mechanisms through which parental involvement influences educational and related developmental outcomes in children, the major mediating variables that enhance or diminish the influence of involvement, and major outcomes for child learning (Figure 1). Although this model of the involvement process suggests that the process is composed of several levels of constructs operating between parents' initial choice to become involved (Level 1) and the beneficial influence of that involvement on student outcomes (Level 5), this review is focused on the first level of the model, which seeks to explain parents' fundamental decision about involvement. The explanation at this level draws on constructs that are focused primarily on the person—the individual parent. Given this focus, we review recent psychological literature defining the constructs that are included in the first stage of the model. In doing so, we address the critical question: Why do parents become involved in their children's education?

Assumptions

We have grounded this review in several specific assumptions. First, we consider the involvement process from the perspective of parents. We are interested in the processes and mechanisms most important to parents' thinking, decisionmaking, and behaviors underlying their decisions to become involved in their children's education. We focus, in other words, on the major psychological constructs that appear to influence parents' fundamental involvement stance. To this end, we examine literature primarily from psychology, with full appreciation that other disciplines (e.g., anthropology, economics, education, sociology) offer significant information about critical and contextual elements of the involvement process.

Indeed, while we emphasize the parent and his or her decisions about involvement, our findings are best understood within the context of the model (Figure 1) and the broader social ecology of parents' lives. As Bronfenbrenner (e.g., 1979, 1986) and others (e.g., Jessor, 1993; Slaughter-Defoe, 1995) have argued eloquently, human development cannot be adequately understood without significant reference to the proximal and distal social systems that work to limit or enhance both development processes and outcomes. The general model (Figure 1) includes specific dimensions of several of these systems (e.g., the parent's full familial and employment-related circumstances at Level 2, and the fit between the parent's choice of involvement strategies and both the child's developmental level and the school's expectations at Level 4). The implications of our findings about these constructs with reference to some aspects of the broader ecology of parental involvement are suggested in the final section of the article.

Although we make use of work from both education and other social science disciplines, the body of theory and research that we review is grounded in psychology. The perspectives and assumptions of psychology thus shape our analysis and the suggestions we derive from that analysis. While we believe strongly that psychological inquiry has much of value to offer understanding of parental involvement in child and adolescent education, we are also mindful that our psychological perspective does not give us access to the full set of issues involved in a comprehensive understanding of parental involvement. Specifically, because the questions and methods of inquiry that guide much psychological research (a) focus on learning more about the individual and (b) characteristically employ carefully limited (often experimentally controlled) methods of investigation, they do not, for example, offer information about the historical context of school-family relations or about the significant impact that political, economic, and social events may have on family-school relations. The outcomes of psychological inquiry (and any policy suggestions that may be derived) are thus limited to the individual and to selected elements of the individual's environments; they offer one window on the full range of issues influencing parental involvement in child and adolescent education.

Our definition of parental involvement incorporates the range of parental activities cited in the involvement literature. Broadly categorized, they include home-based activities related to children's learning in school—for example, reviewing the child's work and monitoring child progress, helping with homework, discussing school events or course issues with the child, providing enrichment activities pertinent to school success, and talking by phone with the teacher. They also include school-based involvement, focused on such activities as driving on a field trip, staffing a concession booth at school games, coming to school for scheduled conferences or informal conversations, volunteering at school, serving on a parent-teacher advisory board (e.g., Baker & Stevenson, 1986; Clark, 1993; Comer & Haynes, 1991; Dauber & Epstein, 1993; Epstein, 1986; Epstein & Dauber, 1991; Hoover-Dempsey, Bassler, & Brissie, 1987, 1992; Hoover-Dempsey, Bassler, & Burow, 1995; Lareau, 1989; Steinberg, Lamborn, Dornbusch, & Darling, 1992; U.S. Department of Education, 1994). This full range of parental activities related to children's schooling and school outcomes is reflected in studies reviewed.

Throughout the article we refer to parents' *choice* of involvement. We believe that parental decision-making about involvement occurs in both explicit and implicit ways. Parents are sometimes explicitly reflective, aware, and active in relation to their decisions about being involved in their children's education; in other circumstances, they appear to respond to external events or unevaluated demands from significant aspects of the environment. We argue that the latter circumstances also represent parental choice, even if implicit. While several variables other than those reviewed here may also influence parents' decisions about involvement (e.g., a parent's need for affiliation or power, a parent's personal reinforcement history), we focus on those that appear within this literature to exert most influence over the decision. Both types of parental decisionmaking for involvement—implicit and explicit—are the focus of this review, as we examine constructs that appear. to explain best the fundamental choice for involvement. Following this interest, and building on the foundation of Hess and Holloway's comprehensive 1984 review of the role and influence of parents in the school performance of elementary and secondary school children, we have examined theoretical as well as empirical literature published generally within the past decade on parental involvement.

As evident throughout the review, research on parental involvement has focused preeminently on its influence on children's educational outcomes. There have been suggestions of benefits to others involved in the process; for example, Comer and Haynes (1991) noted improved parent-staff relationships as a function of parental participation in school activities, while Hoover-Dempsey et al. (1995) reported that mothers appeared to derive information about their own success as parents from their involvement efforts with children. Examinations of benefits to other than children, however, are clearly exceptions to the norm in this literature. In general, the questions that have been consistently asked in the literature, as well as the prevailing definitions of important outcomes, have been shaped by a strong empirical and societal focus on educational benefits to children. As we suggest in the concluding section of the article, however, knowledge of parental involvement and its influence on educational outcomes for children is likely to be enhanced as researchers and policymakers focus on the benefits it may create for all involved in the process-child, parents, school, and the community as a whole.

The specific parents of whom we speak in this review must also be noted. In general, we refer to mothers and fathers (although at times, other family members such as grandparents or siblings are included in the research on parental involvement). However, literature in the area has generally focused on the involvement choices, activities, and influences of mothers. Across a variety of disciplines, observers have noted that mothers are the parents most closely involved in children's education, a pattern that appears related to traditional beliefs about gender roles, sociocultural prescriptions, and gender-linked patterns of power distribution in society (e.g., Hochschild, 1989; Hoover-Dempsey et al., 1995; Juster, 1985; Lareau, 1989; Leitch & Tangri, 1988; Lightfoot, 1978; Smith, 1985). Because we believe that the constructs examined in this review apply well to all family members who may become involved in children's schooling, because fathers' involvement is included in some of the research reviewed, and because shifting patterns of social and economic circumstances may support change in some traditionally gender-linked childrearing tasks, we use the term parents in this review to refer to both mothers and fathers.

Finally, although we use the term *children* to refer to the beneficiaries of parental involvement as examined in this article, our observations—insofar as the literature examines both elementary and secondary school students—include children and adolescents.

On dynamic (process) variables

The variables examined in this article are primarily *dynamic* in character; that is, they are realistically amenable to growth and change over the period of a parent's own adult development. While several are clearly grounded in events preceding the parent's assumption of responsibility for rearing children (i.e., outside of their immediate control), all are subject to influence and alteration by the primary characters in the involvement process: parents, their children, and school personnel.

The decision to focus on such dynamic variables grew from specific observations about the literature. It has been well established, for example,.that family status variables (e.g., income, education, ethnicity, marital status) are often related to parental involvement and, in turn, to children's school success. In fact, Hess and Holloway's (1984) review described as "overwhelming" (p. 187) the evidence for linkages between family socioeconomic status and children's school achievement. Other investigators, often building on Kohn's (1963) assertion that social class is the most powerful variable underlying parents' influence on their children, concluded that family status variables are positively related to parents' ideas about child-rearing, their child-rearing practices, and children's school performance (e.g.,

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Entwisle, 1990; Goodnow, 1984; Hoffman, 1984; Keating, 1990; Lareau, 1987,1989; Thompson, Alexander, & Entwisle, 1988). Still others have suggested that the realities inherent in varied statuses influence the resources—such as income, time, energy, and community contacts—that parents bring to their involvement decisions and influence (e.g., Baker & Stevenson, 1986; Bronfenbrenner, 1986; Hobbs et al., 1984; Lareau, 1987, 1989; McDermott, Goldman, & Varenne, 1984).

It has been equally well established, however, that family status variables do not explain fully parents' decisions to become involved in their children's education, nor do such variables explain the linkages between parents' involvement and child and adolescent school outcomes. Status does not determine parents' thinking, actions, or influence related to their involvement in children's schooling (e.g., Bronfenbrenner, 1992; Slaughter-Defoe, 1995). Even as it may define limits around family resources and may predispose certain attitudes and approaches, status requires activation (e.g., Lareau, 1987, 1989)—parental choices and activities that put into action intentions for their children and
children's schooling. Predispositions grounded in status do not always result in easily predictable outcomes. They do not, for example, appear to determine the value parents put on education, their wishes to be involved or their involvement in children's school progress, their interest in having their children succeed in school, or their aspirations for their children's achievement (e.g., Chavkin & Williams, 1993; Clark, 1983, 1993, Delgado-Gaitan, 1990; Eccles & Harold, 1993, 1994; Lareau, 1989; Lee, 1985; Lightfoot, 1978, 1981; Moles, 1993; Saxe, Guberman, & Gearhart, 1987; Scanzoni, 1985; Spencer, 1985; Spencer & Dornbusch, 1990; Stevenson, Chen & Uttal, 1990). They do not explain many parents' abilities to nurture positive educational outcomes in spite of difficult and presumably discouraging circumstances (e.g., Brody & Stoneman, 1992; Clark, 1983; Delgado-Gaitan, 1992). Further, several studies enabling examination of the relative power of status and process variables in predicting school-related outcomes have often found process variables to be the more powerful (e.g., Clark, 1983; Delgado-Gaitan, 1992; Dornbusch & Ritter, 1988; Epstein, 1983, 1985, 1986, 1994; Hess, Holloway, Dickson, & Price, 1984; Scott-Jones, 1987; Stevenson & Stigler, 1992).

This article assumes a primary focus on process variables (i.e., what parents think and do, across status groupings) that have been associated with parental decisions about involvement in their children's education. It does so because of the evidence suggesting that process variables are significant to outcomes in this area, and in part because they—unlike their status counterparts—are theoretically within the purview of school-initiated influence (e.g., Epstein, 1989; Gotts, 1990). While elementary and secondary schools cannot realistically hope to alter a student's family status, schools may hope to influence selected parental process variables in the direction of increased parental involvement; indeed, some have a growing tradition of doing so, especially during the elementary years (e.g., Anson et al., 1991; Cochran & Dean, 1991; Comer, 1985). The dynamic variables implicit in parents' thinking and behavior choices related to involvement may help us understand more precisely why parents make their involvement choices. Ultimately, this information may help us understand how a parent's involvement choice may be linked to educational outcomes, and how those who wish to improve the parents' involvement and success may reasonably act to do so.

Parents' decisions to become involved in children's education

The model of the parental involvement process under consideration here suggests that parents' involvement decisions and choices are based on several constructs drawn from their own ideas and experiences as well as on other constructs growing out of environmental demands and opportunities (Hoover-Dempsey & Sandler, 1995). At the first level, the model suggests that most parents' fundamental decision to become involved in children's education is a function primarily of three constructs: (a) the parent's construction of his or her role in the child's life, (b) the parent's sense of efficacy for helping her or his child succeed in school, and (c) the general invitations, demands, and opportunities for parental involvement presented by both the child and the child's school.

Consideration of the recent research in each of these three areas suggests that these constructs are each composed of specific sets of beliefs, experiences, and behaviors that serve to position parents in terms of their own answer to the question, Should I, and will I, become involved in my child's education?

PARENTS' CONSTRUCTION OF THE PARENTAL ROLE

The model suggests that one major contributor to parents' positive decisions about involvement in children's education is to be found in their construction of the parental role. In short, what do parents believe that parents are supposed to do in relation to their children's education and educational progress? Examination of psychological and

educational research suggested that parents' construction of the parental role is likely to be influenced by general principles guiding their definition of the parental role, their beliefs about child development and child-rearing, and their beliefs about appropriate parental home-support roles in children's education.

In general, parental role construction appears important to the involvement process primarily because it appears to establish a basic range of activities that parents will construe as important, necessary, and permissible for their own actions with and on behalf of their children. Parental role construction and functioning clearly begin before and extend beyond the child's years in school and, during those years, influence and are influenced by other domains of the child's life as well. Interest here, however, is focused specifically on parental role as it influences parental decisions about involvement in children's schooling.

General role construction

Roles generally are considered to be sets of expectations held by groups for the behavior of individual members—for example, a family's expectations for a mother's behavior, a community's expectations for the behavior of school-children's parents—or sets of behaviors characteristic of individuals within a group—for example, fathers of school-age children, mothers of high school students (e.g., Babad, Birnbaum, & Benne, 1983; Biddle, 1979; Forsyth, 1990; Gross, McEachem, & Mason, 1958; Wheelan, 1994). Both aspects of roles are incorporated into the construct as we use it in this review; thus, it includes both (a) the expectations (explicit and implicit) that parents and those in their significant groups hold for their behaviors in relation to children's schooling and (b) the behaviors they enact in relation to their children's schooling.

The role definition process is characterized by interaction between individuals and their groups over time; it is also characterized by varying degrees of stability and change over time. Three aspects of the role process have been implicated in role stability and change: (a) structurally given demands, or the group's expectations and norms for an individual member's behavior; (b) personal role conceptions, or an individual member's ideas about what he or she is supposed to do as a group member; and (c) role behavior, or the actual behaviors of individual group members, which usually conform to, but may at times violate, the expectations of the group (Harrison & Minor, 1978, drawing on Levinson, 1959). When consonant, these variables tend to yield role stability; that is, when the group's expectations match individual members' expectations for personal behavior and individual members' behavior, roles tend to be stable. When these variables are dissonant-that is, when the group's expectations do not match individual members' expectations or the behaviors of individual members-they tend to create changes in roles and role expectations.

In general, the more a group and its members agree on an individual member's roles and role behaviors, the more Productive is the group (e.g., Wheelan, 1994). Conversely, the more ambiguity associated with a member's roles (i.e., lack of clarity in expectations associated with roles) or the more conflict among the varied roles held by an individual, the more likely are negative outcomes for the group and its members-for example, dissatisfaction with the group or oneself, higher stress, poor participation, lower commitment, and lower productivity (e.g., Fisher & Gitelson, 1983; Forsyth, 1990; Gilbert, Holahan, & Manning, 1981; Kemery, Bedeian, Mossholder, & Touliatos, 1985; Wheelan, 1994).

When applied to parents' choices about involvement in their children's education, these basic tenets of role theory suggest that the groups to which parents belong (e.g., the family, the child's school, the workplace) will hold expectations about appropriate parental role behaviors, including behaviors related to involvement in children's educational processes, and will communicate their role expectations to parents. The groups' expectations may be quite similar, in which case parents will likely experience not only clarity about the behaviors they are supposed to perform but also consistent environmental pressure and support for performing those behaviors. Where these expectations call for positive involvement in children's education, parents are likely to become involved to some degree; for example, Epstein and Dauber (1991) reported that where all constituents agreed on parental involvement, school involvement programs were stronger than.was true. when such agreement was missing. Conversely, of course, if the groups to which a parent belongs expect little or no parental involvement in children's education, parents will be much less likely to choose to become actively involved.

The expectations for appropriate parental involvement behaviors may also be quite varied across the groups to which a parent belongs, in which case parents are likely to experience conflict about appropriate role behaviors or, at the

least, lack of consensus about what the most appropriate parental behaviors are. Such conflict may occur, for example, when a family or school expects parental involvement activities, but the parent's workplace expectations preclude active involvement in conferences (e.g., no time-off policies) or homework supervision (e.g., evening shift work). Parental role expectations may transcend gender (e.g., parents of both genders are generally expected to protect children from harm, for example, on the way to or from school) or may be particular to one gender or the other; for example, mothers often experience stronger role expectations than fathers for day-to-day involvement in children's schooling, such as homework help or signing off on project completion checklists, while fathers may experience stronger expectations for involvement in children's athletic activities or "big" decisions involving such issues as major disciplinary action (e.g., Eccles & Harold, 1994; Hoover-Dempsey et al., 1995; Lareau, 1989; Leitch & Tangri, 1988; Lightfoot, 1978; see also Greenberger & Goldberg, 1989; Greenberger & ONeil, 1993).

Although parents' role construction (i.e., parents' beliefs about the actions they should undertake for and with their children, developed as a function of their membership in varied family, community, and school groups) has been examined in the literature only tangentially with reference to parental involvement in children's schooling, role construction appears logically related to parental beliefs and actions regarding involvement in children's schooling. Several investigators' work has suggested that role construction is influential in parents' involvement decisions. Ritter, Mont-Reynaud, and Dornbusch (1993), for example, included parental attitudes of "deference toward the school" and parental beliefs that teaching "is best left up to teachers" (p. 115)—both variables that may be seen as components of parents' role construction—in their examination of differences among ethnic groups in parental involvement. Similarly, Chavkin and Williams (1993) reported differences among ethnic groups in endorsement of the belief that teachers, rather than parents, should be in charge of involving parents in the school; they also reported that parents, across the ethnic groups examined, expressed interest in a variety of potential involvement roles (e.g., "audience," "home tutor," "school-program supporter" [p. 77]). Neither set of researchers, however, explicitly addressed the specific influence of parents' role ideas on their involvement decisions. Other investigators have simply alluded to the potential influence of parental role construction on parents' involvement decisions. Eccles and Harold (1993), for example, included parents' assumptions about their roles in children's education in their model of parental involvement during children's early adolescent years. Scott-Jones (1991) noted the importance of parental beliefs about linkages between parent responsibilities and teacher responsibilities in young children's literacy learning. Clark's (1983) work certainly suggested strong assumptions among parents of high-achieving students of a personal role to play in the education of their adolescent children. These observations suggest that role construction and its constituent variables be given explicit attention in continued work focused on parents' reasons for becoming involved in their children's education.

Parents' beliefs about child development and child-rearing

Work pertinent to understanding parents' role construction is thus drawn largely from theory in social psychology that explains the emergence and influence of role concepts on human behavior. While several researchers in the area of parent involvement have alluded to the, potential importance of parental role construction in understanding parents' involvement decisions and choices, the work has not yet suggested explicitly how parents' constructs of the parental role in relation to children's schooling are created nor how these constructs might work to influence parents' involvement decisions and behavior. The literature in developmental psychology, however, points in some potentially fruitful directions as we seek to tease out why and how parents' role construction may influence their involvement in their children's education. Work in one area in particular—parental beliefs about child development and parents' related beliefs, goals, and outcome priorities for child-rearing—seems helpful to understanding parents' decisions about that portion of child-rearing related to children's school performance and behavior. Writing on role theory has linked role definition, group membership, and personal beliefs (e.g., Forsyth, 1990), while varied investigations in developmental psychology and parent-school relationships have identified relationships between parental beliefs, values, goals, or knowledge on the one hand, and a variety of parental behaviors pertinent to children's development on the other (e.g., Darling & Steinberg, 1993, Goodnow, 1984, 1988; Lightfoot, 1978; Miller, 1988). In keeping with both literatures, we assume that parents' beliefs about children's development will exert influence on the parenting role they and those significant to them envision for themselves.

Parents' child-rearing beliefs and general ideas about child development have been studied often in relation to children's school outcomes. The sample of studies considered here illustrates some of the connections between this set of parental ideas and the parents' assumptions about their roles in relation to children's schooling.

Assumed in many earlier investigations to develop primarily as a function of parents' socioeconomic status (e.g., Kohn, 1963), parental beliefs about child development and child-rearing have been examined recently to some extent independently of socioeconomic status. These beliefs have been operationalized in various ways-for example, as parental beliefs about the importance of developing conforming behavior in children (Okagaki & Sternberg, 1993); as parental beliefs about the qualities parents should nurture in their children, such as respect, independence, good manners, and happiness (Brody & Stoneman, 1992); as beliefs about the ways children learn (Schaefer & Edgerton, 1985); and as beliefs about the mechanisms responsible for children's competence (McGillicuddy-DeLisi, 1992). Findings in these representative areas have suggested a general pattern in which child-rearing beliefs appear likely to influence parents' choice of behaviors with their children-some of which are pertinent to parental involvement in children's education.

Parents' beliefs in the importance of developing conformity, obedience, and good behavior in children, for example, have been related to poorer school outcomes, while beliefs in the importance of developing personal responsibility and self-respect have been associated with better school performance. Specifically, among younger elementary students, parents' valuing of conformity, neatness, good manners, and good behavior has been linked to lower levels of achievement (in language, reading, and math), lower overall intellectual performance (Okagaki & Sternberg, 1993; Schaefer & Edgerton, 1985), poorer classroom behavior, and lower self-confidence (Okagald & Sternberg, 1993). Among older elementary school children, strong parental endorsement of children's being respectful and well-behaved has been linked to poorer cognitive competence, lower self esteem, higher rates of conduct disorders, and increased withdrawal at school (Brody & Stoneman, 1992). Parental beliefs in "traditional" educational aims and goals—for example, beliefs that children learn passively—have been associated with poorer achievement, poorer classroom behavior, and lower task orientation. The same student outcomes have also been linked to high parental valuing of family privacy with reference to the school (e.g., "teachers should not need information from the home") (e.g., Schaefer & Edgerton, 1985). Stronger academic performance, on the other hand, has been linked to parents' beliefs in independent thinking, personal responsibility, and valuing children's development of self-respect (Schaefer & Edgerton, 1985; Brody & Stoneman, 1992); higher levels of maternal involvement in children's schooling have also been related to mothers' valuing of children's self-respect (Brody & Stoneman, 1992).

McGillicuddy-DeLisi (1992), taking an alternative approach to parents' child rearing beliefs, examined parents' ideas about the mechanisms responsible for children's personal and social competence in the elementary grades. Among six alternative orientations or beliefs about the ways children develop competence, she reported that parents generally endorsed attribution explanations of competence development (e.g., children develop competence through their active consideration of ideas about the causes of their performance) or constructivist explanations (e.g., children develop competence through their active construction of ideas and explanations for events). She found, too, that parents' endorsement of the belief that "gender differences are responsible for much of children's competence development" was linked to lower child achievement levels (math and composite test scores) and lower teacher ratings of ' child academic performance, intelligence, and creativity (teacher ratings of children did not differ by gender, leading her to suggest that mothers' beliefs were not based on accurate observations of gender differences). The assumption in the pattern of findings that parental beliefs precede child outcomes and the correlational nature of her findings led McGillicuddy-DeLisi to test the possibility that the reverse might pertain, that is, that child behaviors might influence parents' beliefs. Reasoning that parental beliefs should change across grade levels as parents gain more information about children's achievement and classroom behavior if they respond to child behavior more than their own belief systems, she found no relationship between mothers' beliefs and child grade level. While the analyses produced some negative linkages for fathers, McGillicuddy-DeLisi concluded overall that parents' beliefs "continue to persevere" (p. 136) even when available information offers little validating, and sometimes even contradictory, evidence, Goodnow's (1988) review offered similar and substantial support for both the consistency of many parental beliefs and the observation that beliefs are often "received knowledge" (p. 296) from the culture, persisting across time relatively independent of variations in experience (see also Parsons, Adler, & Kaczala, 1982).

The pattern across these varied studies suggested that parents' endorsement of more conforming or traditional behaviors in children—as well as beliefs in the power of such "givens" as gender—are consistently associated with lower levels of achievement and poorer classroom behavior among younger and older elementary students. Further, they yielded evidence supporting the proposition that parental child-rearing beliefs precede and influence parental, and thus child, behavior, rather than the reverse (i.e., child behavior influences parental beliefs and related behaviors).'Perhaps because the nature of parent-child relationships changes in adolescence as peers come to add their

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important influence to adolescent children's development and behavior, parents' child-rearing values in relation to secondary school outcomes have not been well examined. Parents' beliefs about child-rearing and desirable child outcomes, however, would appear logically to influence parental behaviors relevant to selected school outcomes well into adolescence, thus underscoring the importance of extending parent values-child outcomes research into the secondary years (see, e.g., Steinberg, Elmen, & Mounts, 1989; Youniss, 1989).

Despite some of the clear patterns in findings for parents of young and elementary age children, there continue to be apparent uncertainties in this body of work about the nature of parents' child-rearing and child development beliefs on the one hand, and the relationships that may pertain among parental beliefs, parental actions, and child outcomes on the other (e.g., Goodnow, 1985; McGillicuddy-DeLisi, 1992; Sigel, 1985, 1992; Sigel, McGillicuddy-DeLisi, & Goodnow, 1992). McGillicuddy-DeLisi, in addressing the uncertainties about paths of influence and causation, contrasted her own constructivist view of parents' child-rearing beliefs—which suggests that parents construct their beliefs and tend to hold them across time, regardless of evidence about their continued accuracy—with an attributional view, which would assert that child-rearing beliefs are not consistently held truths but rather ideas about the causes of specific behaviors at particular points in time and are therefore susceptible to change. McGillicuddy-DeLisi suggested that both perspectives may ultimately be helpful in identifying how parental beliefs are related to varied parental practices and child outcomes (see also Sigel, 1992; Youniss, DeSantis, & Henderson, 1992).

How does this body of work, then, inform understanding of parents' role construction and its contribution to parents' involvement decisions? Fundamentally, it suggests that among the ingredients of parents' role construction as it relates to their decisions about involvement in children's schooling, specific sets of beliefs are quite important: (a) parents' ideas about child development (that is, parents' beliefs about how children grow and develop, their beliefs about what children need from parents); (b) their beliefs about specific, desirable childrearing outcomes; and (c) their beliefs about the effectiveness of specific childrearing practices in promoting desired outcomes.

A parent who believes, for example, that children need external structure and discipline in order to learn, who believes in the primacy of children's respectful and conforming behavior, and who construes children's learning as a primarily passive and receptive process would seem most likely to incorporate into his or her parental role construct the importance of personal behavior intended to create and reinforce children's overt respect, conformity, and focus on getting right answers. A parent whose role construct incorporates these social beliefs would seem most likely, for example, to construe parental involvement not as an active decision to engage in the educational process with the child but as a background process manifested in such behaviors as reminding children to "Sit down and mind," or "Say 'Yes, ma'am' when your teacher talks to you." Similarly, a parent who believes that children need nurturing and encouragement in order to develop well and who believes that the purpose of education is to support individual children's curiosity, skill development, and creativity would seem most likely to incorporate into his or her role construct the importance of behaviors intended to assess and develop the child's unique skills and talents, to ask for the child's opinions and evaluations, and to seek information from teachers about the schoolbased development of children's thinking processes.

While parents' role constructs would appear to be created from the host of social values held by the significant groups to which they belong, parents' ideas about child development, child-rearing, and child outcomes would appear to be among the most important components from the perspective of the parent involvement process. Further, if Goodnow's (1988) and others' observations (e.g., McGillicuddy-DeLisi, 1992; Parsons et aL, 1982) are correct in identifying these beliefs as remaining relatively constant across the child's development, one may reasonably conclude that parents' role construction may continue, across childhood and adolescence, to be shaped in part by their fundamental ideas about how children develop.

Beliefs about parents' home-support roles in child and adolescent education

One further area.of inquiry in the educational literature—examinations of parents' beliefs about their roles at home in supporting children's education offers additional perspective on parents' role construction and its potential influence on parents' involvement decisions. Lareau (1987, 1989), for example, contrasted the beliefs of parents in a predominantly working-class school with those of parents in a predominantly upper-middle-class school and found what she characterized as distinctly different understandings of family support roles in young elementary children's education. Working-class parents had what she termed a "separated" view of home and school. They tended to believe that their roles involved getting children ready for school—for example, ensuring that children have good

manners and getting them to school on time—but did not believe that their roles in children's education extended far beyond these basic preparations. These parents had a strong tendency to accept the school's decisions about their children (e.g., regarding classroom placement or retention) because, she argued, they believed that the schools—not parents—were primarily responsible for decisions about educational progress. Upper-middle-class parents, on the other hand, were characterized as having an "interconnected" view of home and school. These parents tended to see themselves as having an integral role, together with the school, in educating children. As they construed it, their parental roles involved active monitoring or "keeping on top of" children's progress; they also saw themselves as responsible for intervening in school decisions as necessary. In part because of their consistent monitoring, these parents appeared to exert more control over their children's educational progress than most working-class parents assumed or retained over theirs.

Rather than contrasting groups within a culture as did Lareau (1987, 1989), Stevenson and his colleagues examined national cultures as implicitly homogeneous entities and drew comparisons among them (e.g., Stevenson, Chen, & Uttal, 1990; Stevenson, Lee, Chen, Lummis, et al., 1990; Stevenson, Lee, Chen, Stigler, et al., 1990; Stevenson & Stigler, 1992). Stevenson's observations about parents' views of appropriate roles in clementary children's education suggested strongly that his sample of parents in the United States viewed the home as offering emotional support, encouragement, and supplementary or social and nonacademic experiences for their children. The parents did not, however, envision home support as including articulation of the importance of achievement, monitoring of children's work, or active help with homework. Stevenson and his colleagues concluded, in general, that parents in their U.S. group seemed to abdicate some parental responsibilities to teachers once their children entered elementary school (Stevenson, Lee, Chen, Stigler, et al., 1990).

Although the U.S. parents in the Stevenson group's studies constituted a large and socioeconomically diverse sample from a major urban area, they did not appear to manifest much variability in beliefs about appropriate parental home support roles. As a group, they seemed to fit Lareau's (1987, 1989) description of working-class parents: despite higher-income parents' appearance in the Stevenson sample, the group as a whole did not appear to manifest the characteristics seen by Lareau in her sample of upper-middle-class parents. Some of the apparent differences between the two sets of work may be related to variations in method and approach (Lareau conducted an ethnographic analysis of two elementary schools, while Stevenson and colleagues conducted broadly based surveys of large multinational samples), but it seems likely that parents' beliefs about their roles in children's schooling have simply not been
sufficiently well articulated or examined as yet to permit definitive conclusions about the function of parents' home-support beliefs or their parental role construction in general in their involvement decisions. In contrast to both Lareau's and Stevenson's conclusions, for example, Clark's (1983) and Segal's (1985) work with low-income families implied that low-income parents of similar status varied considerably in beliefs about parents' home-support roles and in their involvement decisions. Clark found high achievers' parents comfortable with their reasonably well articulated parental roles as active educators and preparers of their children; they believed that they had strong home-based educational responsibilities with their children, and they worked consistently and hard to meet these responsibilities. Segal's examination of low-income families also suggested several variations in parental role beliefs within the group, and found these variations correlated with important differences in parents' involvement behaviors (see also Scott-Jones, 1987).

This sample of studies thus offered rather contradictory information, suggesting that variables associated with social class influence parents' beliefs about their home-support roles in children's education (Lareau, 1987, 1989), or that such variables do not exert significant influence over such beliefs (Clark, 1983; Segal, 1985), or that variations among U.S. parents are not as important as the general cultural orientation in the United States toward relatively passive parental roles in children's education (Stevenson, Chen, & Uttal, 1990; Stevenson, Lee, Chen, Lummis, et al., 199d; Stevenson, Lee, Chen, Stigler, et al., 1990; Stevenson & Stigler, 1992). It appears likely that important information about parents' role construction may be gleaned from each set of findings. Thus, many parents in the United States may indeed construe their roles as incorporating relatively low levels of active involvement in children's education, especially as compared to some parents in other cultures. Such a finding may reflect a broadly held social belief in the United States that parental roles and responsibilities with children do not extend into the activities and mission of formal education. If this belief is held, it would, according to role theory, influence individual parents' ideas about what they and other parents are supposed to do in relation to their children's education. The set of findings may suggest, also accurately, that many parents of lower socioeconomic status in the United States experi-

ence the cumulative effects of low education, low income, and the frequently accompanying higher levels of general environmental stress as depressing the probability of constructing an active view of parents' roles in children's schooling (e.g., Eccles & Harold, 1994). Some parents' general life experiences may have taught them that "parents like me don't get active-they send their children to school and hope for the best." However, the findings that some parents of lower socioeconomic status in the United States do construct positive, active views of their roles in children's education and act on those beliefs suggest that varied role constructions may be created in the context of specific personal and family groups even within the limitations imposed by broader social groupings.

Conclusion: parents' role construction

Overall, theoretical and empirical work in these three areas suggests that parents develop beliefs and understandings about the requirements and expectations of the parental role as a function of their membership and participation in varied groups pertinent to child-rearing (e.g., families, schools, churches, the broader culture). Further, parents' actions related to their children, including their decisions about educationally related involvement in their children's lives, will be influenced by parents' role constructs and by the dynamic processes that involve them in confronting complementary (or competing) parental role expectations held by the varied groups in which they hold membership. Parents' ideas about child development, child-rearing, and appropriate roles in supporting children's education at home appear to constitute important specific components of the parental role construct as influential particularly in parents' decisions about involvement in their children's education. Parents' role construction appears overall to offer some portion of the answer to the question, Why do parents become involved in their children's education?

Parents' sense of efficacy for helping children succeed in school

A second major construct influencing parents' decisions about involvement is their sense of efficacy for helping their children succeed in school (see model in Figure 1). As applied specifically to the issue of parent involvement, this construct raises the question, Do parents believe that, through their involvement, they can exert a positive influence on children's educational outcomes? Examined only recently in regard to parental involvement, parents' sense of efficacy for helping children succeed in school is drawn from the general foundation of personal efficacy theory, but also appears related to work on attributions for school success as well as personal theories of intelligence. Finally, a small group of studies in the educational literature that have focused oil parental strategies for solving school related problems appears to offer information instructive in thinking about specific manifestations of parental efficacy that may be related to parents' involvement decisions.

Personal efficacy in general

Parents' sense of efficacy for helping children succeed in school has been set within the general body of literature examining the power of self-regulation or thoughts about one's own role and influence in a situation in determining one's behavior choices within that situation (e.g., Bandura, 1977, 1986b; Grusec, 1992). Work in this area has assumed a strong role for cognitive processes through which individuals interpret the meanings of varied experiences, and through which the relationship between their interpretations and their behavioral choices is mediated. These processes have to do most centrally with individuals' beliefs about their abilities to exercise and maintain some level of control over events that affect their lives (Bandura, 1989a).

Applied to parental involvement in children's education, self-efficacy theory suggests that parents will guide their actions (i.e., make their involvement choices) by thinking through, in advance of their behavior, what outcomes are likely to follow the actions they might take. They will develop goals for their behaviors, based on these anticipations, and will plan actions designed to achieve these goals (Bandura, 1989b). Their goal-setting process will be influenced by their own appraisals and estimates of their capabilities in a situation; for example, the stronger their perceived self-efficacy in the situation, the higher the goals they will set and the firmer will be their commitments to realizing their goals (Bandura, 1989b). Individuals' self-efficacy beliefs undergird in part the challenges they decide to undertake, how much effort they are willing to put into the situation, and the extent of their persistence and perseverance in working to overcome difficulties in the situation (Bandura, 1989b). Of critical importance to understanding the varied involvement choices that individuals make is the fact that self-efficacy beliefs are concerned not with skills "but with beliefs about what one can do with the subskills one possesses" (Bandura, 1986a, p. 368). Findings that persons with apparently lower resources and skills (e.g., lower-income parents, parents with relatively low levels of education) can and do act efficaciously and effectively in involvement activities intended to help their children gain school-related skills make sense in this context (e.g., Clark, 1983; Scott-Jones, 1987; Segal, 1985).

In general, the stronger individuals' self-efficacy beliefs, the higher the goals they are willing to set for themselves, and the higher is their commitment to meeting those goals (Bandura, 1989a). If individuals have strong self-efficacy beliefs, they will tend to put forth even greater effort in response to difficulty or less than satisfactory performance on their part; they approach difficulties as challenges to be mastered rather than threats to be avoided (Bandura, 1989a, 1989b; Schunk, 1989). This affirmative orientation fosters their involvement; they set challenges, tend to visualize paths to achieving success in the challenges they take on, commit to achieving their goals, and are usually efficient in the analytic thinking they bring to dealing with complex situations related to their goals (Bandura, 1989a, 1989b). Because they believe that they can exercise control over adverse events, they do not "conjure up apprehensive cognitions, and are therefore not perturbed by them" (Bandura, 1989a, p. 1177). They tend to respond to difficulties or failures in the particular domain with increased effort, partly because they believe failure is due to insufficient effort rather than lack of ability (Bandura, 1989b).

Individuals low in self-efficacy for a given domain of activity, on the other hand, tend to believe that they cannot cope with difficulties in that domain. They tend to avoid situations in the area, slacken their efforts, or stop trying altogether when they are involved in activities related to that area (Bandura, 1989a; Bandura, 1989b, p. 730; Schunk, 1989). Low-efficacy individuals will tend to avoid difficult tasks, which they believe will exceed their abilities (Bandura, 1989a, 1989b), and when difficulties emerge, they tend to focus on their deficiencies, the difficulty of the task, or "the adverse consequences of failure" (Bandura, 1989b, p. 731; Grusec, 1992)—responses which further detract from their ability to act on the task at hand (Bandura, 1989b). Persons with low efficacy in a given domain who experience failure will experience drastically reduced motivation to become involved. They tend to give up and are slow to recover; because they perceive failure as caused by personal deficiencies, failure may readily cause them to "lose faith in their capabilities" (Bandura, 1989b, p. 731). At its most extreme, perceived self-inefficacy brings about a sense of "vulnerability to total loss of personal control" (Bandura, 1986a, p. 369)—a consequence consistent, for example, with Alexander and Entwisle's (1988) assertion that "underlying structural conditions" may diminish many minority parents' "efficacy as agents of academic socialization" (p. 110). Bandura (1989a) also suggested that perceived self-inefficacy may cancel out even the attraction of positive anticipated outcomes from specific behaviors; thus, parents with low efficacy for helping their children in school would likely find this low efficacy itself interfering with involvement intentions aimed at achieving even highly desired goals, such as improved performance for their children.

Parents' sense of efficacy for helping the child succeed in school

Efficacy theory in general thus offers specific suggestions related to parents' sense of personal efficacy in the domain of helping their children succeed in school. It suggests, for example, that parents with a higher sense of efficacy for helping the child succeed will tend to see themselves as capable in this domain; thus, they are likely to believe that their involvement will make a positive difference for their children. They are likely to believe in their own ability to overcome challenges that may emerge during the process, and to believe that they can deal successfully with any problems that may arise. They are also likely to persevere when faced with difficulties related to their own achievement of successful involvement or their children's difficulties in meeting current school demands. Parents low in efficacy in this domain, on the other hand, are likely to avoid involvement for fear of confronting their own perceived inadequacies or because of their assumptions that the involvement will not produce positive outcomes for themselves or their children.

Work to date in the specific area of parents' efficacy beliefs related to helping children succeed in school is limited but suggestive of the construct's potential usefulness in understanding more about parents' involvement decisions and behaviors. Hoover-Dempsey et al. (1987), drawing on Bandura's efficacy theory and on work linking teacher efficacy to varied indicators of teaching effectiveness (e.g., Ashton, Webb, & Doda, 1983; Dembo & Gibson, 1985), reported that teacher efficacy and school socioeconomic status predicted parents' conference participation and classroom volunteer work, as well as teacher perceptions of support from parents. Two elements of parent involvement carried out at home (help with homework and involvement in home instructional programs designed by teachers) were not related to socioeconomic status but fluctuated with variations in teacher efficacy and principals' perceptions of teacher efficacy.

Building on these findings, Hoover-Dempsey et al. (1992) examined parents' sense of efficacy for helping children succeed in school in relation to parent involvement. They defined parent efficacy as parents' beliefs about their general ability to influence their child's developmental and educational outcomes, about their specific effectiveness

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in influencing the child's school learning, and about their own influence relative to that of peers and the child's teacher. Results revealed positive linkages between parents' sense of efficacy and involvement with children in educational activities at home and volunteering time at the school; efficacy was negatively related to reported parent-teacher phone calls. Parents' efficacy levels showed some linkages to general level of education (e.g., parents with a grade school education had significantly lower efficacy scores than parents with any amount of college education), but the relationship was not completely linear (e.g., efficacy levels did not differ significantly between parents with a high school education and those with some college or a college degree); importantly, efficacy was not significantly related to income, employment status, or marital status.

Eccles and Harold (1993) defined parents' efficacy beliefs as composed of three variables: "parents' confidence that they can help their children with school work" (p. 572), parents' views of their competence as their children progress to higher grades, and parents' beliefs that they can influence the school through school governance. Noting that parents of secondary students are usually less involved than are parents of elementary students, Eccles and Harold suggested that lower involvement (or noninvolvement) may be due to a decrease in parents' feelings of efficacy as children's work becomes more advanced. Eccles and Harold (1994) subsequently reported a portion of their findings from a longitudinal sample of over 1,000 predominantly White, lower-middle- to middle-class children and their parents. They observed, among other things, that parents' efficacy was positively related to mothers' involvement in children's mathematics and reading education.

Eccles and Harold's (1994) report also included variables potentially related to efficacy, most notably "intellectual confidence" (apparently, mother's confidence in her own intellectual abilities), achievement motivation ("liking intellectual challenges and sticking with hard problems rather than giving up" [p. 15]), and "family's valuing of mastery (importance of learning, sticking with problems and using time productively)" (p. 15). They reported that mastery and achievement beliefs—among the set of efficacy and efficacy-related beliefs they examinedwere the most strongly linked to parents' involvement.

The lower potential explanatory power here for efficacy may have been related in part to issues of definition and measurement. As measured by Hoover-Dempsey et al. (1992), for example, efficacy for helping children succeed in school was assessed by several questions related to parents' beliefs about their influence over children's learning and school success as well as their beliefs about their own influence in this process relative to that of teachers and peers. Eccles and Harold (1994) defined efficacy somewhat differently; they included parents' confidence in helping children with schoolwork, views of personal competence as their children moved through the grades, and beliefs about their ability to influence the school through governance involvement. These two operational definitions of efficacy were thus different, and some variables that appear to have been treated as separate from efficacy in the Eccles and Harold investigation (e.g., parents' intellectual confidence) appear quite close to concepts included in Hoover-Dempsey and colleagues' definition of efficacy.

Further, other investigators in the area have also examined constructs similar to parents' sense of efficacy for helping children succeed in school. Clark (1983), for example, reported ethnographic findings suggesting that higher-achieving high school students' parents, compared to lower-achieving students' parents, saw "themselves as wiser (if not 'smarter') than the children" (p. 122). Wisdom here seemed to involve parental beliefs that they could help their children, that their children would benefit from their involvement, and that their children would pick up what they had to offer and learn from them—all elements of a parental sense of efficacy for helping children succeed in school. Presumably in part as a consequence of these beliefs, parents of higher-achieving students assumed active involvement, guidance, and teaching functions with their children, behaviors that were not evident among parents of lower-achieving children. Clark's (1993) later report of survey data from 460 ethnically diverse parents of third graders included information from a two-point scale of parents' sense of efficacy, which he defined as "felt knowledge of how to help" (p. 95); included among his findings was the fact that high achievers' parents showed significantly higher efficacy scores than did low achievers' parents.

In general, sense of efficacy for helping children succeed in school appears linked to parents' involvement decisions because it enables parents to assume that their involvement activities will positively influence children's learning and school performance. Parents who hold such positive efficacy beliefs seem more likely than their low-efficacy counterparts to assume that the time and effort they allocate to involvement are well spent because of the positive child outcomes they are likely to create. They also seem much more likely to assume that if they encounter new demands or

difficulties in the course of involvement activities, they will be able—through effort, skills, and other resources they may access—to meet and master those difficulties.

Consideration of this perspective also suggests an alternative understanding of findings that parents with less education are less likely to become involved than are parents with more education (e.g., Dauber & Epstein, 1993; Lareau, 1987; Ritter et al., 1993). Specifically, these findings may be tapping lower-education parents' sense of inefficacy-a judgment that, given their skills and knowledge level in general, they are unlikely to be successful in involvement. Such low efficacy might operate effectively to keep some low-education parents from a positive decision to become involved. Indeed, as representative of such findings, Lareau's (1989) report that parents with less education expressed doubts about their own abilities to help their elementary children in school, as well as their hope that their children's teachers would assume full responsibility for teaching those skills, suggests low efficacy and relatively clear judgments that involvement would most likely not produce improved school learning for children. It must be noted, however, that other researchers have reported variability in involvement decisions within relatively homogeneously low-education parent groups (e.g., Clark, 1983; Delgado-Gaitan, 1992), which suggests that efficacy operates to at least some extent (or perhaps within certain boundaries) independently of education level.

Work in the area of parents' sense of efficacy for helping children succeed in school, although largely correlational and only suggestive at this point, appears well complemented by research in two other areas: (a) parents' beliefs or attributions about the roles of ability, effort, and luck as causes of children's school performance and (b) parents' implicit theories of intelligence.

Beliefs about ability, effort, and luck as causes of child and adolescent school success

Just as the parental sense of self-efficacy in this domain is predicated on a fundamental belief in the power of one's own parental efforts to make a difference in children's educational outcomes, work in the area of attributions has examined the relative influence that parents perceive in varied potential sources of children's school performance as perceived by parents. Work in this area has suggested in general that parental attributions to child effort are often associated with higher levels of school success among children, while parental attributions to child ability or luck are often associated with poorer school performance.

In one program, for example, Hess et al. (1984) included parents' thinking about specific causes of school outcomes in longitudinal studies of parental variables implicated in elementary children's school performance. Focusing on specific parental perceptions of sources of children's school success—parent's help and encouragement, teacher's help, child ability, and luck—Hess et al. asked mothers to weight the four general attributions by assigning some portion of 100 points to each. They examined attributions to luck in particular, because they assumed these attributions would indicate mothers' uncertainties about the effectiveness of their own efforts with children. Consistent with predictions, they found attributions to luck negatively related to both elementary school readiness and later elementary achievement.

Stevenson and his colleagues focused attention on parents' beliefs about the relative importance of ability and effort to children's school success. In a primarily descriptive study of Chinese and U.S. parents' attitudes toward elementary children's mathematics performance, U.S. parents were reported to be satisfied with what they believed to be good school performance by their children (Stevenson, Lee, Chen, Lummis, et al., 1990). The children's actual performance, however, was well below that of their Chinese counterparts. The discrepancy led the authors to speculate that U.S. parents' low standards for achievement were responsible for their satisfaction with less than optimal performance. They suggested that U.S. parents' low standards, combined with their positive attitudes toward whatever work the children produced, discouraged the children from investing more effort in improved achievement.

Another report by the Stevenson group focused on family variables associated with elementary children's achievement in the United States, China, and Japan (Stevenson, Lee, Chen, Stigler, et al., 1990). Reporting that the achievement of U.S. children was again well below that of their Japanese and Chinese counterparts, the authors suggested that the differences grew from several parental variables. Parents of the U.S. children tended to hold low standards for performance and overestimate children's abilities; further, they expressed general satisfaction with children's current performance levels. All of these parental attitudes, the authors suggested, conveyed to children the impression that further effort on schoolwork was not needed. The authors went on to suggest that U.S. parents also emphasize the role of innate abilities when they think about children's performance (see also Spencer & Dombusch, 1990). Then,

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believing that ability sets a cap on attainment, these parents deemphasize the value of effort. Thus, rather than encouraging their children to work harder when they perform poorly (and rather than working harder themselves to help their children more effectively) they tend to assume that poor performance cannot be changed because it is rooted in the unchanging quality of ability. Further, wanting to support their children, they hold relatively low standards and expectations and praise modest accomplishments. This praise communicates anew that satisfactory rather than optimal performance is acceptable, When children observe their parents' beliefs and related behaviors, the authors suggest, they find little reason to believe that success is linked to effort.

Bracey (1996) raised important cautions about appropriate interpretations of some of these findings, noting that some of the data appear to suggest that U.S. parents' effort beliefs actually parallel (rather than far exceed) their ability beliefs. Even taking these cautions into account, however, the findings raise the important suggestion that parents in the U.S. sample considered ability—a characteristic that is usually not seen as amenable to change—to be a significant variable in accounting for children's achievement.

Taken together, this body of work suggests that parents' ideas about effort and ability in academic success may well play an influential role in parents' decisions about appropriate involvement and, ultimately, in children's school attainments. Related work by Alexander and Entwisle (1989) underscores the possibility. Their study of young elementary children found that parents' estimates of their children's ability to do schoolwork (assessed through comparisons of one's own child's ability relative to other children's abilities) were positively linked to their expectations for children and to some child grades.

The descriptive and correlational nature of many of the findings in this area underscores the still speculative nature of many assumptions regarding the influence of parental beliefs about the roles of effort, ability, and luck in children's school performance. Further, as is true in other domains of parental involvement, the ideas have not been well explored in relation to adolescents' schooling. Nonetheless, the ideas seem potentially quite useful in understanding further the role and influence of parents' sense of efficacy for helping children succeed in school. In general, this work on attributions suggests that parents who have a strong sense of efficacy for helping their children succeed in school would also be most likely to attribute to effort much of a child's success as well as their own success in helping the child. In acting on their beliefs that they can exert positive influence over the child's learning, they act to exert effort through their involvement on behalf of increased child learning. They would seem most likely to view the child's ability as a quality to be increased, enhanced, or made the most of, rather than a given guarantee of success or a given limitation on performance. Similarly, believing that they can act effectively to help their children learn, they would seem most likely to view luck as largely irrelevant or, at worst (for example, in the case of a child being assigned to a teacher with a bad reputation), as a challenge to be worked with and overcome. Conversely, a parent with a poor sense of efficacy for helping the child succeed in school would seem likely to make few attributions to effort; not believing that personal efforts will be effective in influencing child outcomes, the low-efficacy parent would seem likely to assume that child ability or luck (for example, associated with tests or teachers) exerts the most important influence over child learning.

Work in attributions (e.g., Brookover, Beady, Flood, Schweitzer, & Wisenbaker, 1979; Dix & Grusec, 1985; Hartman & Maehr, 1984; Henderson & Dweck, 1990; Weiner, 1974) also suggests that parents will tend to persist, put forth significant effort, and expect success *if* they believe that they have some control over desired outcomes, in this case, children's school success. In fact, a specific sequence of events might be suggested as experienced by parents during their decision-making about involvement: Parents observe their children's performance, make attributions about its causes, develop expectations for future behavior and outcomes, experience affective reactions to their attributions and expectations, and respond behaviorally (e.g., Dix & Grusec, 1985). Extrapolating from this set of suppositions, parents' involvement decisions might be influenced by their attributions in several ways. For example, parents would seem more likely to involve themselves and persist until they experience success if they believe that unstable and controllable factors (e.g., effort) are responsible for poor school performance (e.g., the child—or the parent—didn't put forth enough effort); if this were the parent's attribution, pressing himself or herself as well as the child to more effort would be a likely response of choice. Alternatively, parents might opt not to involve themselves if they attribute a child's poor performance (or their own) to stable or internal factors (e.g., the child has low ability, or the parent doesn't have enough knowledge).

Although seldom linked to this literature on parental attributions for school success, work in the related area of parents' implicit theories about intelligence' also offers important perspectives on parents' sense of efficacy for helping children succeed in school. Just as the attributions literature suggests that parents will differ in their beliefs about the sources of children's school success, the literature on implicit theories of intelligence suggests that parents will differ in beliefs about the malleability of their children's intelligence—that is, the extent to which children's intelligence is fixed or susceptible to change through effort.

Implicit theories of intelligence

Theoretical work on implicit. theories of intelligence has suggested that individuals tend to hold either an entity theory or an incremental theory of intelligence (e.g., Henderson & Dweck, 1990). An entity theory assumes that intelligence is fixed and not easily changed, while an incremental theory assumes that intelligence is malleable and subject to change, most notably through effort and persistence. Individuals holding an entity theory tend to develop performance goals, focused on doing the best one can and on gaining positive judgments of performance given the fixed abilities that one has (e.g., "she's doing the best she can," "it's great work, considering her ability," "you can't expect much more from him"). Individuals holding an incremental theory, on the other hand, tend to have learning goals that are oriented toward increasing abilities and improving competence. Because they believe that performance and intelligence can be improved through effort, incremental theorists' behaviors tend to reflect a strong focus on effort and persistence (e.g., "she can do it; she just has to keep working on it," "this is hard work and it takes a lot of effort, but you can do it").

In general, theory in this area suggests that parents who hold an incremental theory of intelligence, regardless of their confidence in their own intelligence, would most likely emphasize the role of effort (their own and the child's) in the child's learning. (Such a perspective may in fact offer insight into the occurrence of high efficacy among some parents with relatively low levels of education.) Incremental theorists' learning goals would motivate them to increase the child's competence as well as their own. These goals would enable parents to focus on gaining new ideas about helping children, maintain relative openness about their own perceived shortcomings, construe errors and difficulties (their own and their children's) as part of a learning process, and to encourage children not only to do the work assigned but to think about the issues and principles underlying specific assignments-that is, reaching toward higher levels of competence (see also Elliott & Dweck, 1988). Far more than entity theorists, parents holding an incremental theory would likely assume that they, and their children, can play a significant role in controlling outcomes.

Alternatively, parents who are at risk for low or less productive involvement would seem to hold an entity theory of intelligence; that is, they believe strongly in the preeminence of ability over effort and often lack confidence in their own intelligence. Such parents would seem most likely to take actions designed to minimize external judgments that they are not capable—for example, keep a low profile, stay away from school, refrain from asking for help (fearing negative judgments of their own or their child's abilities), and avoid questioning school decisions about children. Children's difficulties with learning would most likely be perceived as reflecting low child ability and as being relatively impervious to significant change; they would also be seen, therefore, as requiring little active involvement or intervention by the parent.

The work also suggests that parents with a strong sense of efficacy for helping children succeed in school may well hold an incremental theory of intelligence—that is, they believe that their involvement will make a difference for the child, improving and enhancing the child's competence and performance. Parents with a low sense of efficacy, on the other hand, would seem likely to hold an entity theory of intelligence, believing both that the child's ability is not likely to change and that any involvement efforts the parent might put forth would have little impact on the child's learning.

Strategies for solving school-related problems

One further area of educational research, focused on specific strategies that parents pursue in helping their children solve school-related problems, appears to offer information potentially pertinent to understanding parents' sense of efficacy for helping their children succeed in school. Baker and Stevenson (1986), for example, studied mothers' approaches to helping eighth graders manage the transition to high school. Defining "general academic strategies" as including use of a tutor, making a child change friends, denying privileges, preparing for high school entry, and contacting teachers, the authors reported that the full group of strategies was negatively related to student grades; that is, mothers of lower performing students reported implementing more strategies overall than did mothers of

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higher-performing students. They suggested that lower performers' parents may have developed and used a broad mix of strategies in response to children's poor performance. The authors also asked mothers what they would do in hypothetical problem situations (e.g., the child is doing poorly in math); they found in this circumstance that the number of solutions suggested was positively linked to student grade point average. In speculating on reasons for this finding, the authors suggested that mothers who generated more solutions to the hypothetical problems may have been more successful in solving real problems earlier in the child's school careers, thus promoting current levels of child of success. Alternatively they may have been more persistent than those who suggested fewer solutions to hypothetical problems, or may have found better matches between school demands and their own strategy choices.

One of Baker and Stevenson's (1986) conclusions was that parents reported varied management strategies related to their children's schooling, and that these strategies influenced their young adolescents' school outcomes. Useem (1991) built on this suggestion and examined parents' efforts to influence seventh graders' mathematics course placement; she found important relationships between parent strategies and eventual child placement. Implicit in her findings was the suggestion, reminiscent of Lareau's (1989) conclusions, that more involved parents—those who persisted in efforts to influence placement even when they confronted school barriers to involvement—created more effective and more appropriately demanding school situations for their children than did parents who were not active managers of their children's schooling. Other investigators have offered intriguing looks at parents' hypothetical decision-making in other situations related to school outcomes (e.g., Youniss et al., 1992), but parents' thinking about strategies related to child and adolescent school success does not appear to have been examined substantially beyond the small sample of studies noted here.

The studies suggest overall that parents who are higher in efficacy for helping children succeed in school may manifest efficacy in behaviors specifically focused on helping children solve current and anticipated problems in school. Believing that their efforts will make a difference for the child, high-efficacy parents would seem likely to generate strategies to solve current problems, anticipate problem situations in which they might become productively involved, and persist when faced with difficulties in solving problems. Parents low in efficacy, on the other hand, would seem much less likely to step into the problem-solving arena in the first place. Doubting their own ability to have an impact, they seem much more likely to rely on the child or the school to deal with problems, and to trust in others' intervention or luck to ameliorate difficult situations for their children.

Conclusion: parental efficacy for helping children succeed in school

Although primarily suggestive and correlational at this point, work applying efficacy theory and related constructs to parental involvement in children's education appears to offer potentially important access to understanding why, at the level of individual parental choice, parents decide to become involved in varied aspects of their children's schooling. The construct appears also to explain at least some of the consequent influence of parental involvement on children's educational outcomes. It does so in part because Bandura's theoretical work identifies specific paths of influence among variables important to the development of a sense of personal efficacy, and in part because it identifies likely paths between an individual's sense of efficacy and the actions that he or she is most likely to take in given situations. Thus, it suggests connections among causes of self-beliefs, self-beliefs, and patterns of action. While examined primarily to this point in relation to varied specific forms of involvement, parental self-efficacy for helping children succeed in school appears pertinent, because of its grounding in parents' beliefs about their personal capabilities and likely effectiveness within the area, to their fundamental decisions about the wisdom and likely pay-off of involvement.

This body of theory, when combined with relatively recent empirical work, suggests that parental efficacy, attributions, implicit theories of intelligence, and strategies for solving school-related problems may offer useful explanations of parental decisions about involvement in their children's education. Efficacy theory and related research suggests that parents with a stronger sense of efficacy for helping their children succeed in school will be those most likely to decide that involvement will yield positive outcomes for their children. Pertinent research within an attributions framework suggests linkages between parental efficacy and parents' focus on the value of effort, rather than ability or luck, as critical to children's school success. Work on implicit theories of intelligence suggests further that parental endorsement of an incremental, rather than an entity, theory of intelligence may also be positively related to a strong sense of efficacy for helping one's children succeed in school; the underlying logic of the position suggests that parental involvement in children's schooling will be seen as valuable *if* the target of the parent's effort—the child's intelligence, ability, or school performance—is believed to be fundamentally alterable.

Finally, research on parental strategies aimed at improving school-related outcomes for children suggests that higher-efficacy parents are more likely to develop and act on strategies intended to solve current or anticipated problems related to school success.

Weaving together theoretical and empirical observation in all three areas, it appears that parents with a strong positive sense of efficacy for helping children succeed in school are also likely to believe *both* that effort is preeminent in explaining success (attributions to effort) and that intelligence is malleable (an incremental theory of intelligence); we also suggest that parents holding this belief set will, further, tend to develop and implement proactive strategies designed to help children succeed in school. Conversely, parents with a weak sense of efficacy for helping children succeed in school are likely to believe *both* that intelligence or ability is fixed (an entity theory of intelligence) and that ability and luck are the preeminent sources of school success (attributions to ability and luck); parents holding this belief set will tend to be relatively passive, rather than planful or proactive, in responding to children's school problems.

In sum, a stronger sense of efficacy, as augmented by the related variables noted here, seems essential to a positive parental decision about involvement. This is because a sense of efficacy for helping children succeed in school fundamentally predisposes a parent to choose (or not choose, in the case of low efficacy) an active involvement role in the child's education. The predisposition is grounded in the parent's belief that personal actions related to the child's schooling will be effective in improving school outcomes. Rooted in this belief about the likely outcomes of personal involvement, parents who hold a positive sense of efficacy for helping children succeed in school are likely to choose involvement. This is particularly true, according to the model proposed, if parents also hold a role construction affirming the importance and appropriateness of involvement in children's schooling and if they perceive general opportunities and demands for involvement from both the child and the child's school.

General invitations, demands, and opportunities for parental involvement

The model suggests that the third major construct influencing parents' involvement decisions consists of general opportunities, invitations, and demands for involvement. The fundamental question examined with reference to this construct is this: Do parents perceive that the child and the school want them to be involved?

Effective general invitations and demands may come both from children and their schools. Children may hold more emotional influence over parental decisions because of the personal relationship involved, but inviting school environments appear to be similarly influential because of schools' authority and power in children's lives. At this general level, invitations, opportunities, and demands may consist of a child's overt affirmation of the importance of parental approval and participation, a school climate that is inviting, and teacher behaviors that are welcoming and facilitating. (Specific invitations to become involved in particular 'events and activities are included at the second stage of the model, which is focused, as noted below, on parents' choice of particular forms of involvement.)

General opportunities, invitations, and demands presented by the child

Although work on the influence of invitations and demands from children for parental involvement is relatively sparse, some indications of the presence and influence of child-generated invitations are available. This evidence appears in several areas.

The potential influence of child age and developmental level on parents' involvement decisions, for example, has been suggested, in a pattern generally reflecting a greater tendency toward involvement among parents of younger as opposed to older children (e.g., Dauber. & Epstein, 1993; Eccles & Harold, 1993, 1994). Efforts to explain declines in involvement often associated with child age usually point to changes in the level of academic work required across the span of school years (e.g., Chavkin & Williams, 1993; Dauber & Epstein, 1993; ScottJones, 1991), changes in parents' beliefs about their ability to help when their children are having problems (e.g., Dauber & Epstein, 1993), and specific developmental changes in children (for example, younger children generally express more interest than older children in parental involvement, adolescents' emergent focus on independence and autonomy usually depresses active interest in overt parental involvement; Eccles & Harold, 1993, 1994).

A child's overall level of performance may also influence parents' decisions about involvement, although the evidence here is mixed. Dauber and.Epstein (1993), for example, reported that parents of elementary and middle school children who were doing better academically reported more school-related involvement than did parents of children who

were doing less well. Similarly, Delgado Gaitan (1992) reported that parents of better early elementary readers, when compared to parents of poorer readers, were more likely to undertake specific involvement actions with and on behalf of their children. Baker and Stevenson (1986), on the other hand, found that mothers of lower-performing young adolescents used more involvement strategies than. mothers of higher-performing students (see also Eccles & Harold, 1993). The varied pattern of findings may be reflective of developmental influences (e.g., parents of younger children may be motivated toward involvement in part by the prospect of improving and affirming positive performance, while parents of older children may be more motivated toward involvement if adolescent performance is poor). It may also be related to simple variability in student and parent responses to performance levels. For example, some children may invite or demand help when they are struggling with work, while others may attempt to hide or ignore poor performance; similarly, some may see good performance as an incentive to invite parental involvement and enjoyment, while others may see it as an opportunity to allocate potential involvement time to other pursuits

Children's personal qualities—aspects of personality, learning style, and preferences—may also influence parents' general predisposition toward involvement in their children's education. Hoover-Dempsey et al. (1995), for example, found that parents of elementary children conveyed strong awareness of their children's unique characteristics and related these qualities to decisions about their involvement, for example, describing a child as "slow" and needing a lot of parental help, another child as "demanding a lot of herself' and succeeding apparently independently of active parental involvement. Eccles and Harold's (1993) review related to their broad model of parental involvement also suggested that how well a parent likes a child may influence involvement decisions: Positive relationships are likely to encourage involvement, they suggested, while more conflicted relationships seem likely to discourage involvement. A test of this hypothesis with a sample of 1,400 seventh and eighth graders supported the prediction that parents with more positive views of the child would be more involved (Eccles & Harold, 1994).

Across the elementary and secondary age span, it appears that such variables as children's developmental levels, performance patterns, qualities of personality, and learning style may function as important influences on parental decisions about involvement. Their importance is suggested not only by the research and informed speculation noted above, but by the general observation. well supported in developmental literature, that child characteristics often influence varied dimensions of the child's environment, including parents' behavior (e.g., Maccoby, 1980; Stem, 1977; Thomas & Chess, 1977).

General opportunities, invitations, and demands presented by schools and teachers

Invitations and opportunities for involvement presented by the child appear well complemented by the evident influence of school and teacher invitations on parents' involvement decisions. The importance of school practices to parents' involvement decisions has been well noted in the literature (e.g., Bauch, 1993), and at least one major program of research on parent involvement has long focused on the potential power of school and teacher invitations for involvement (e.g., Dauber & Epstein, 1993; Epstein, 1986, 1991, 1994; Epstein & Dauber, 1991). This program has consistently produced evidence that patterns of teacher attitudes and invitations are important to many parents' decisions about participation in children's schooling (see also Eccles & Harold, 1993). In one survey of elementary parents, for example, Epstein (1986) compared teachers who engaged in many parent involvement activities (*high-involvement* teachers) with teachers who engaged in few such activities (*low-involvement* teachers); teachers were matched for experience, grade level, student achievement and average parental education. She found that parents with high-involvement teachers were more positive about school and more aware of teachers' interest in their involvement than were parents with low-involvement teachers. Further, the high-involvement teachers themselves, unlike their low-involvement counterparts, worked to involve all parents, regardless of socioeconomic level (see also Bedker & Epstein, 1982, Epstein, 1994). Finally, positive parental involvement practices were found to characterize elementary schools more than middle, junior high, or senior high schools (see also Eccles & Harold, 1994).

The significance of these teacher efforts to create inviting climates for parent involvement are underscored by related findings. For example, Epstein has found that parents were most involved when teachers actively encouraged involvement (Epstein & Dauber, 1991), that stronger teacher involvement practices were positively related to higher reading achievement among children (Epstein, 1991), and that parents who recorded stronger beliefs in the school's efforts to involve them also believed strongly in the "goodness" of school (Dauber & Epstein, 1993). Similarly, Eccles and Harold (1994) reported that parents who held more positive views of the school's concern, accountability, and desire for parents' involvement were more involved in the school. Important in this sample of findings is the fact that the

parents involved had children in grades ranging from elementary through middle school and represented varied socioeconomic circumstances.

Comer's work examining schools as communities (e.g., Anson et al., 1991; Comer & Haynes, 1991) has suggested similarly that school organizations oriented toward understanding students' families often experience success in increasing parents' involvement and in improving students' performance. These analyses have suggested that the results occur in large part because schools include parents in a variety of meaningful roles and, in so doing, increase communication and trust among parents and school staff—an accomplishment particularly important for traditionally disenfranchised parent groups, including parents of color and low socioeconomic status (see also Cochran & Dean, 1991; Powell, 1991).

The value of intentionally creating a climate of opportunities and demands for parent involvement in a school is also supported by role theory, described above. As group members (in this case, parents, school personnel, and students) communicate frequently and come to consensus on appropriate role expectations and behaviors, clarity and agreement on member roles is likely to increase all members' successful and satisfying performance of their own roles (see also Comer & Haynes, 1991). Indeed, Epstein and Dauber (1991) reported that schools where teachers and parents reported strong feelings about the importance of parental involvement were also the schools with stronger parent involvement programs and practices. '

Overall, these varied strands of work suggest that a school climate of invitations to involvement influences parents' understanding of teachers' interest in parental help and support, parents' feelings of being needed and wanted in the educational process, and parents' knowledge about their children's schoolwork. Particularly given findings that many parents criticize home-school contacts as being empty (characterizing them, for example, as contrived, insubstantial, or awkward, mainly offering opportunities for teachers to talk and parents to listen; e.g., Harry, 1992; Lareau, 1987; Lightfoot, 1978,1981) and want more meaningful contacts with the schools (e.g., Eccles & Harold, 1994; Epstein, 1994; Leitch & Tangri, 1988; Moles, 1993), the general invitations and demands presented by schools seem potentially very influential in parents' decisions about involvement in their children's education,

Conclusion: general opportunities and demands

The overall value of multiple invitations, opportunities, and requests presented by children and their schools appears to lie in the welcoming and proactive demand they create for parents' involvement. The extent to which parents believe themselves to be invited to participate actively in the educational process will, the model suggests, exert important influence on their basic decisions about involvement. This influence may be particularly important if a parent's role construction or sense of efficacy for helping children succeed in school does not encourage involvement. The considerable evidence on teacher practices intended to support parental involvement, and parents' sensitivity to teacher attitudes about their involvement, underscores the importance of school-generated invitations and opportunities for positive parental decisions about involvement.

Summary and conclusions

Among the many sources of influence on parents' decisions to become involved in their children's education, we have suggested that the three most influential psychological constructs characterizing parents' lives are (a) parental role construction, (b) parents' sense of efficacy for helping children succeed in school, and (c) parents' perceptions of the general invitations, demands and opportunities for involvement presented by children and their schools. Parents' role construction is described in part by general role theory and appears to be influenced also by parents' beliefs about childrearing as well as beliefs about their home-support roles in child and adolescent education. Parents' sense of efficacy for helping children succeed in school is, similarly, described in part by theory and research on personal efficacy in general, and in part by parents' beliefs about ability, effort, and luck as causes of child and adolescent school success, as well as parents' implicit theories of intelligence. Parents' perceptions of the general opportunities and demands for involvement from children and from their schools emerge from characteristics of children as they interact with parents and from teachers' general involvement practices as well as schoolwide efforts to create a generally inviting climate for involvement.

In focusing on these origins of parental involvement, the general model outlining the importance of these constructs (Figure 1) assumes that the parental involvement process is linear; that is, the model assumes that parents first make a decision to become involved and, having made that decision, move on at the second level of the model to choose

among specific forms of involvement and activities. In reality, the involvement process is probably much more recursive and more complex, and its elements at times more nearly simultaneous for parents than is suggested by the apparent linearity of the model. Further, variables other than those incorporated within the constructs of the model are likely also to influence parents' basic involvement decisions (e.g., wishes for affiliation or control, affective variables related to feelings about one's history in school). Nonetheless, it seems valuable both to identify constructs of primary importance to the involvement process and to separate varied dimensions of the process (the latter largely because the constructs appear to be influenced by different variables).

According to the argument of the full model (Figure 1), parents become involved in their children's education because they have developed a parental role construction that includes involvement, because they have a positive sense of efficacy for helping children succeed in school, and because they perceive general opportunities and invitations for involvement from their children and their children's schools. This model suggests that parents, having made the basic decision to become involved, then choose specific involvement activities. These specific choices are shaped by three major constructs operating at the second level of the process: (a) parents' perceptions of their own skills, interests, and abilities; (b) parents' experience of other demands on time and energy; and (c) parents' experience of specific invitations to involvement from children, teachers, and schools. The model suggests that parents' involvement then influences children's educational outcomes through the mechanisms suggested at the third level (modeling, reinforcement, and instruction), as mediated by the constructs included at the fourth level (the developmental appropriateness of parents' strategies and the fit between parents' actions and the school's expectations). The involvement process finds its end in this model in its influence on the child's educational outcomes, most notably the child's knowledge, skills, and personal sense of efficacy for succeeding in school.

Combining elements of the basic involvement decision

This review has focused on theory and research related to the first level of the model, the level at which parents make the fundamental decision about involvement. We believe that the three constructs reviewed above function together in a generally additive fashion to create the likelihood of a parent's positive decision to become involved in his or her child's education. (We believe the constructs do not function multiplicatively in part because the absence of one construct [a value of 0] does not appear to negate the possibility of a positive involvement decision.)

The most important construct in this decision appears to be the parent's role construction. Absent a firm and well-constructed belief that she or he *should* be involved in the child's education, the parent's status in the areas of efficacy and perceptions of general invitations appear insufficient in most circumstances to predict an affirmative decision for involvement. Sense of efficacy, however, appears very important to the basic involvement decision; the parent's belief that she or he is indeed capable of helping the child certainly augments the power of role construction to enable a positive decision. Perceptions of general invitations and opportunities appear to have a more limited role; they appear likely to have the strongest impact when either or both role construction and sense of efficacy are at moderate to low (rather than strong) levels. In Table 1, we have illustrated specific combinations of the three constructs that appear likely to be associated with strong, moderate, and weak likelihoods of a positive decision for involvement.

As indicated, the highest likelihoods of a positive involvement decision would appear to occur when role construction is strong and sense of efficacy is strong to moderate. General invitations, however, appear to have much less influence on the basic involvement decision under these conditions, simply because the parent with a strong positive role construction and a strong sense of efficacy is likely to decide in favor of involvement whether or not general invitations are received. Under conditions of strong role construction and weak efficacy, however, general invitations may well increase the probability of an affirmative involvement decision.

Moderate likelihoods of involvement would appear to occur under varied combinations of moderate to strong role construction and moderate to weak selfefficacy. It seems probable that strong general invitations within this level of role construction have the power to move parents from moderate to high likelihood of involvement (or from low to moderate likelihood of involvement). This seems especially true if invitations are focused at least in part on enhancing parental role construction and sense of efficacy. The middle panel of Table 1 also suggests that parents who hold a moderate role construction and a weak sense of efficacy and perceive low levels of general invitations are unlikely to make an affirmative decision for involvement; they seem more likely, instead, to remain inactive while experiencing guilt about their failure to be involved ("I *should* do something, but...").

Table 1
Schematic representation of hypotheses concerning the likelihood of parental involvement by level of role construction

Level of invitations and demands from children and school	Level of parental efficacy high	medium	low
High/strong role construction			
High	H	H	M
Medium	H	H	M
Low	H	M	M
Medium/moderate role construction			
High	H	H	M
Medium	M	M	M
Low	M	M	L
Low/weak role construction			
High	M	L	L
Medium	L	L	L
Low	L	L	L

Note: H=high, M=moderate, L=low.

The lowest likelihoods of involvement would seem to occur when role construction is weak; that is, if a parent does not believe that he or she should be involved in his or her child's education, involvement is unlikely. An exception may be found when level of efficacy is high ("I *could* be effective if I decided to be involved") and level of general invitations is high and focused on constructing a more actively engaged role. However, even high to moderate levels of invitations, if combined with weak role construction and low efficacy, would appear insufficient to create a positive decision for involvement.

The most important observations to be derived from the varied conditions illustrated in Table 1 are these. First, positive role construction, at strong or moderate levels, seems essential for high likelihood of involvement; parents must feel that they *should* be involved in their children's education if the basic involvement decision is to be affirmative. Second, parents' sense of efficacy for helping their children with schooling appears to be a very close second in importance; for example, a strong sense of efficacy added to a moderate level of role construction appears likely to produce a positive involvement decision. Third, sense of efficacy by itself, without moderate to strong role construction, does not appear likely to yield a strong affirmative decision for involvement; this is because the belief that "I could help" must be combined with the sense that "I *should* help" if it is to have substantial positive impact on the involvement decision. Fourth, invitations appear to have power to make a difference in the fundamental involvement decision; they appear to increase the chances of positive involvement decisions within various moderate-to-low combinations of the other two constructs (see upper two panels of Table 1), particularly when developed with the intention of increasing parents' positive role construction and sense of efficacy. Well-designed invitations hold this power because role construction and efficacy are both, to an important extent, socially constructed. Invitations to involvement, if well-designed, create opportunities for the social construction—by parents, teachers, schools, and children—of parental roles that include involvement and an enhanced sense of efficacy.

Recommendations for research

A broad test of the hypotheses implicit in Table 1 would be strengthened by specific prior attention to the actual contributions of variables treated in the review as conceptually—but not yet empirically—related to the three major constructs. For example, linkages among variables conceptually related to parental role construction (parental beliefs about child-rearing, ideas about home-support roles) and parents' sense of efficacy for helping their children succeed in school (beliefs about ability, effort, and luck as causes of children's school success; implicit theories of intelligence; reported strategies for solving school-related problems) should be examined.

Specific issues related to each of the three major constructs warrant investigation. Parents' role construction is socially defined; specific examination of the evolution of parents' role construction as related to helping children succeed in school would be useful, as would the influence of explicit efforts by schools to help parents create an active, affirmative role construct for involvement in their children's education. Parents' sense of efficacy should be examined further

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with specific reference to parental involvement. For example, as this review was being revised, Bandura and colleagues reported an important investigation of child and parental variables, including parental efficacy, as related to child achievement (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996). Their measures of parent academic efficacy should be examined in relation to others reported in the literature, and hypothesized linkages among efficacy, role construct, invitations, and children's academic success should be tested with extended elementary and secondary populations. Specific questions to be addressed might include these: How do the various sources of efficacy (direct experience, vicarious experience, persuasion, and emotional arousal) contribute to a strong sense of parental efficacy in the domain of helping children succeed in school? Can schools successfully offer direct and vicarious efficacy-enhancing experiences that would complement the more generally used approach of persuasion (e.g., "Please come," "It's important to help your child")? Similarly, the role of well-designed invitations and opportunities to enhance role construction and increase parents' sense of efficacy for helping children succeed in school should be addressed systematically, as should the power of general invitations from children, across the school age span, to influence parents' involvement decisions.

Recommendations for policy and practice

This article has focused on parents' perspectives on involvement, primarily with reference to the theory and research in psychology. Our recommendations for policy and practice are necessarily, then, focused on parents and on schools' interactions with parents. We strongly assume, however, that these recommendations must be set within the broader ecology of school policy and social values; that is, they must be set within the context of recommendations for action from other domains important to understanding and supporting the family-school relationship. As noted at the outset of the review, psychological inquiry offers a powerful explanation of parents' involvement in children's education, but the results of psychological inquiry must be combined with knowledge derived from other disciplines if full explanations are to be crafted. 'Me suggestions that we offer below thus focus primarily on only one portion of the full parental involvement picture, namely, parents' perspectives and thinking about whether they should become involved.

Efforts to involve parents should be grounded in the knowledge that parents' beliefs about their roles in children's schooling and their effectiveness in helping their children succeed are the primary points of entry into increased, and increasingly effective, involvement. If schools do not take these parental contributions to involvement seriously, the likelihood of any policy or practice having.significant influence on involvement practices or outcomes seems very low. The parent-school relationship, particularly in the domains we have discussed, is created within the historical and contemporary interactions among the parties involved. If children are to realize the benefits of constructively involved parents, parents must have—or be enabled to create—a personal role construction that calls for active involvement in children's education. Similarly, parents must have, or be enabled to create, a strong sense of efficacy for helping children succeed in school. If parents come to the school-family relationship with strong to moderate standing in both areas, they will likely find-through parent initiated interactions with schools-ways to be effectively involved in their children's education. If they do not come to the parent-school relationship with fairly strong role construction and efficacy, however, schools and communities wishing access to the benefits of parental involvement must work specifically to enhance parents' standing within both areas.

This might be accomplished in several ways, the first of which is likely to be explicit recognition that part of the goal of educating children resides in efforts to enhance parental role construction and parental efficacy for involvement in their children's schooling. Clearly, not all parents have important needs in this area; those whose current standing in these constructs places them in the high-likelihood-of-involvement category are likely to find school efforts and invitations helpful but not essential to useful participation. However, parents whose own histories or current standings place them in the moderate-to-low-likelihood categories would appear most likely to benefit substantially from effective school and community efforts to enhance parental role construction and efficacy.

At the community and school district level, efforts to include parents as an explicit part of the schools' mission would be helpful. The social construction of parental roles means that parents and the group most pertinent to children's education, the school, should work together to define parents' roles. Specifically, this means that schools and teachers should be enabled—through reduced hours with students in class, other released time, or part-time help—to spend at least a portion of the work week interacting with parents. Some of this time might be well spent creating a feasible, mutually constructed set of expectations for the parent's role in relation to the child's schooling; some of it might be similarly well spent in devising specific ways for parents to offer limited but academically useful

help to their children. At the same time, community employers should be encouraged with all reasonable strength to offer released hours for parents to spend (limited) time in school, talk with the teacher(s), pick up homework help instructions, observe the child, and so on. Similarly, efforts to increase teachers' and parents' access to each other would be helpful. Such efforts might include allocating time for meetings with parents as part of teachers' regular (and paid) responsibilities; hiring a parent-community liaison professional to facilitate increased parent-school interaction; installing telephones in classrooms so that simple parent-teacher communications are facilitated, and hiring someone to help format, produce, and distribute regular communications from teachers to parents about learning goals, activities, and focused suggestions for parental help. The latter may be particularly helpful at the middle school and secondary school levels, where such regular communications might include specific, succinct information on opportunities and needs for parental guidance in such areas as course selection, major projects, and help or participation in supporting extracurricular activities.

The review suggests strongly that those who wish to increase parental involve ment and extend the benefits it offers must focus at least in part on the parent's perspective in the process. Parents who believe they should be involved in their children's education and schooling and who have a positive sense of efficacy about the usefulness of their involvement are likely to be involved. The most effective efforts to improve involvement must incorporate invitations that support and build these two socially constructed qualities, particularly among parents whose experiences have resulted in relatively weak role construction or efficacy. Absent specific attention to these parental components of involvement, the best and most well financed school efforts to invite involvement are likely to fall frustratingly short of success.

Note

[1] While the literature suggests strongly that parental involvement in general has positive effects on children's educational outcomes, it is important to note that parental involvement may also have no consequences or even negative consequences for some children. For example, as suggested by Hoover-Dempsey and Sandler's (1995) full model, if parental involvement is either developmentally inappropriate (e.g., the parent of an adolescent actively helps the child complete homework every day) or constitutes a poor fit with school expectations for involvement (e.g., the parent expects to sit in on class every day), children, parents, and teachers may experience negative outcomes (see also Lightfoot, 1978). Further, there are clearly circumstances in which children of uninvolved parents do well, often because of personal strengths or interests and alternative environmental support. The model and this article focus on the literature describing the many circumstances in which parental involvement is present and appears to lead to positive developmental and educational outcomes for students.

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Effects of early educational awareness

Do Early Educational Awareness Programs Increase the Chances of Eighth Graders Reaching Higher Education?

Daniel Mayer
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Major Findings

- In cities with four year dropout rates ranging from 30 to 50 percent, less than two percent of the eighth graders surveyed believed they would be high school dropouts. Furthermore, over 85 percent believed they would continue their studies after high school.
- Significantly more students who had participated in early educational awareness activities planned to enroll in college prep programs than those who did not participate in early awareness programs, suggesting that schools with early awareness prorams help to narrow the gap between high aspirations and appropriate course selection.
- our study corroborates the findings of the National Educational Longitudinal Study of 1988 that students—including low-income minority students—frequently aspire to get a college education but often are not planning to take high school courses that will prepare them for college.
- Significantly more Hispanic students participating in early awareness programs aspired to graduate from college and attain college level occupations than those who did not participate in early awareness program
- Students participating in early awareness programs believed their teachers had significantly higher expectations for them. These perceived expectations may enhance the likelihood of students' enrolling in college prep programs and increasing their chances of making it to higher education.

Do early educational awareness programs increase the chances of eighth graders reaching higher education?
This study describes the effects of early educational awareness activities about postsecondary options on eighth grade students' career aspirations, educational aspirations and educational planning.

Introduction

The. need for early educational awareness, particularly among minority and low-income students who are under-represented on the nation's college campuses, has been well documented. For example.e, the National Education Longitudinal Study (NELS) of 1988 surveyed 24,500 eighth graders in 1,035 schools across the United States and found that while two-thirds of the nation's eighth graders aspired to careers which require college or higher degrees, only.one-third planned to enroll in college preparatory programs.

In the past decade, programs have been created throughout the country with the objective of increasing the college-going rate of underrepresented. students by removing barriers that keep them from higher education. Early awareness has become a part of Congressional discussions involving the reauthorization of the Higher Education Act of 1965. Five early awareness bills have been introduced in Congress. While interest in early awareness is growing, empirical evidence on the success of early-awareness is lacking. The only major evaluations that we found of early awareness programs that aim to impact middle school students career aspirations, educational aspirations and educational planning were done by Jerry Davis for the Pennsylvania Association of Colleges and Universities. Davis found early awareness programs had little positive effect on increasing students' academic motivation and getting students to

value and prepare for postsecondary education. The Higher Education Information Center conducted the study presented here to evaluate the impact of our early awareness programs and to add to this research base.

The program

The Higher Education Information Center, a division of The Education Resources Institute in Boston, Massachusetts, launched an early awareness initiative, known as the Statewide Youth Educational Awareness Program, in 1986. The program brings together volunteers from public schools, higher education, community agencies and businesses to organize projects that inform young people about postsecondary education, career options and financial aid. The Center currently operates its early awareness program in 18 Massachusetts cities, all of which have large concentrations of low-income and minority students.

Our early awareness activities are targeted at middle school and early high school students and their parents, reaching them through a variety of approaches: multilingual publications; workshops and videos that highlight the importance of college and the steps needed to prepare for it; motivational speakers; visits to college campuses; and a variety of career awareness activities that emphasize the importance of educational planning.

Eighth graders who attended middle schools participating in the Statewide Youth Educational Awareness Program and were questioned for this study, took part in activities intended to raise their career and educational aspirations and to assist them in making educational plans to match these aspirations. The early awareness activities took place the winter prior to students selecting their high school programs. They lasted four to six weeks and include at least weekly classroom sessions. School personnel took a lead role in implementing activities and a school-wide focus was given to the program by making announcements on the speaker system and/or by posting relevant material in school hallways.

Educational planning and the relationship of high school programs (e.g. "academic," "vocational," "business," etc.) to students, career goals were repeatedly mentioned throughout the activities. Specific activities included: 1) career speakers; 2) interest inventories with individualized computer printouts; 3) a workshop on the economic benefits of staying in school and pursuing careers that require postsecondary education; 4) sending home a booklet to parents or guardians an the same topic; and 5) handing out college souvenirs. Some schools also have: 6) field trips to college campuses and worksites; 7) a poster and essay contest on careers; and 9) motivational speakers.

Methodology

Our study's purpose was to compare students who had been involved in early awareness programs with similar students who had not.

A total of eight schools from four different cities (two schools per city) were chosen for the study because they provided large concentrations of minority and low socioeconomic status (SES) eighth graders. One school from each city had participated in our early awareness programs (referred to as intervention schools), and one school—with a comparable demographic profile—had not (referred to as control schools).

Each school selected to participate in this study had a chance to implement early awareness activities, but not all opted to do so. The four schools that participated saw the value of early awareness and invited program staff to work with their staff and students. This factor should be kept in mind when examining the findings. Furthermore, the students who participated in our program were not separated randomly, but remained in their initial groupings in their schools.

The instrument used to measure the effect of the program (see Appendix A) was part of the survey used by the National Education Longitudinal Study of 1988. The NELS questions were chosen because they had been field tested and. provided a national data base for comparison purposes.

Profiles of the eight schools surveyed are presented in Table 1. The groups and subgroups—by race and socioeconomic status (SES)—are well matched, as can be seen by looking at the 'total' columns.

Table 1

Profile of schools and groups by race/ethnicity and income

	City 1		City 2		City 3		City 4		Total	
	#	%	#	%	#	%	#	%	#	%
	Intervention schools									
Total population										
*Low income	643	70.1	140	43.6	210	35.2	320	58.0	1313	55.1
Eighth grade										
Asian	3	1.8	2	3.4	3	1.0	25	8.7	33	4.0
Hispanic	123	72.3	18	30.5	44	15.0	69	23.9	225	31.3
Black	4	2.3	5	8.5	43	14.7	32	11.1	84	10.4
White	36	21.2	34	57.6	197	67.2	161	55.7	428	52.8
Am. Ind.	4	2.3	0	0.0	6	2.0	2	0.69	12	1.5
Total	170		59		293		289		782	
	Control schools									
Total population										
*Low income	383	70.4	462	74.3	212	37.9	353	49.9	1410	57.9
Eighth grade										
Asian	9	6.5	4	5.5	3	1.1	6	1.8	22	2.7
Hispanic	84	60.4	18	24.6	24	9.1	135	39.8	194	32.1
Black	5	3.6	4	5.5	71	27.1	17	5	97	11.9
White	41	29.5	47	64.4	158	60.3	180	53.1	426	52.4
Am. Ind.	0	0.0	0	0.0	6	2.3	1	.29	7	0.9
Total	139		73		262		339		746	

Source: Massachusetts Department of Education, 1990.

*Low income numbers only available by building.

Looking for variables that could distort the study's findings, teaching staff at the control schools were asked if they did any early awareness activities. We found few: two control schools had a school-business partnership, but only one had taken advantage of it by taking a site visit and inviting career speakers to their school. Another control school had its entire eighth grade participate in a workshop on the economic.benefits of staying in school, but had no other activities.

Table 2

Response rates and profiles of respondents

	Intervention schools				Control schools			
	Total population	Number received	Response rate	Profile of respondents	Total population	Number received	Response rate	Profile of respondents
Total	782	487	62.3	100.0	746	487	65.3	100.0
Sex								
Female	N/A	240	N/A	49.3	N/A	261	N/A	53.6
Male	N/A	246	N/A	50.5	N/A	221	N/A	45.4
No answer		1		0.2		5		1.0
Race/Ethnicity								
Asian	33	27	81.8	5.5	22	19	86.4	3.9
Hispanic	225	112	49.8	23.0	194	95	49.1	19.5
Black	84	44	52.4	9.0	97	61	62.9	12.5
White	428	249	58.2	51.1	426	267	62.8	54.8
Am. Indian[1]	12	15	N/A	3.1	7	10	N/A	2.1
No answer		40		8.2		35		7.2

[1] Because "American Indian" and "Alaskan Native" were listed as one category on the survey and the Massachusetts Department of Education does not keep a count of the latter group, we are unable to calculate a response rate for American Indian.

The survey was given in the first three weeks of May 1991, well after students had selected their high school programs. In the intervention schools, the survey was given by classroom teachers rather than the principal organizers of the early awareness activities. The teachers' instruction sheet made no reference to the early awareness program in order to prevent the teachers from reminding the students about the program.

The surveys were administered either in heterogeneously grouped classrooms or were given to all levels to complete. Bilingual classrooms were excluded. In schools in which the staff did not have time to survey the entire school, the staff was asked to make.sure all educational levels were represented evenly.

Coincidentally, the number of surveys returned from each group was exactly the same: 487. The control group's response rate was 65.3 percent and the intervention group's was 62.3 percent. These numbers allow statistically confident comparisons. The subgroups of race/ethnicity sample size range from 10 to 267 with response rates ranging from 49.1 percent to 86.4 percent (Table 2). We cannot make confident comparisons with Asians and American Indians because of their small sample sizes. Where needed, a Chi-Square test was administered to determine statistical significance at the .05 level for the total sample and the black, Hispanic and white sub-groups.

Results

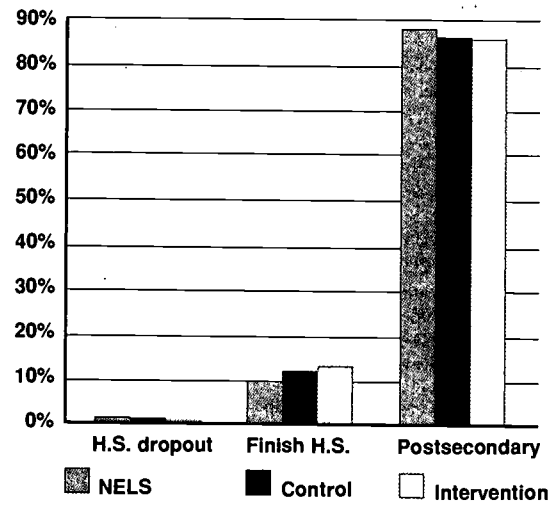
EDUCATIONAL ASPIRATIONS AND PLANS

Aspirations

The students' educational aspirations were assessed by asking them, "As things stand now, how far in school do you think you will get?" Given that the students were attending middle schools with over 50 percent low SES populations, in cities with four year high school dropout rates ranging from 30 to 50 percent, one would expect responses to reveal very low aspirations. Figure 1 tells a different story. Less than two percent of the control and intervention students believed they would not finish high school. Furthermore, 85.7 percent of the intervention and 86.7 percent of the control group believed they would continue their studies after high school. The study group students demonstrated almost the same level of interest in continuing their studies after high school as the NELS students. This is surprising given that the NELS study included a cross section of eighth graders nationally.

Figure 1

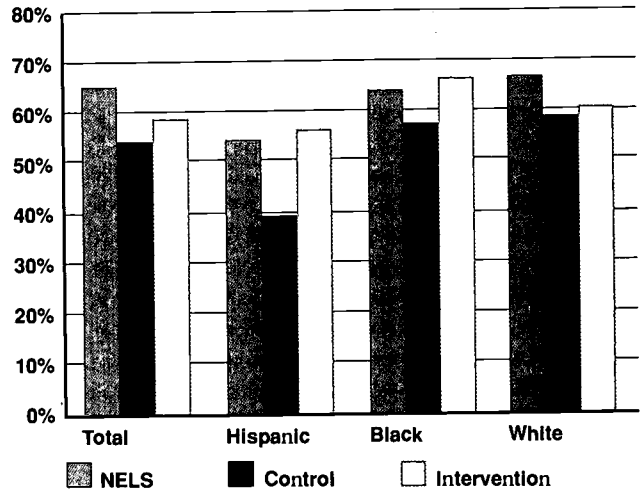
Percentage of eighth graders aspiring to various education levels



When the postsecondary educational aspirations of the groups are compared we find some important differences. Slightly more intervention students than control students planned to graduate from college or attend graduate school, 59.0 versus 54.7 percent (see Figure 2). The differences were not statistically significant. But significantly more Hispanic intervention than control students, 56.3 versus 40 percent, and slightly, but not significantly, more intervention-than control black students, 66.6 versus 58.3 percent, had college aspirations. The white students differed very little, 60 percent in the control group and 61 percent in the intervention group. Although the white students in the two groups showed no difference in college aspirations, the white students' educational aspirations were much higher than the Hispanic and slightly higher than the black students' aspirations in the control group.

The higher aspirations of the Hispanic and black students in the intervention group suggests that the intervention may have increased their aspirations to a level parallel or greater than those of white students. (See Appendix B for a complete breakdown of educational aspirations.)

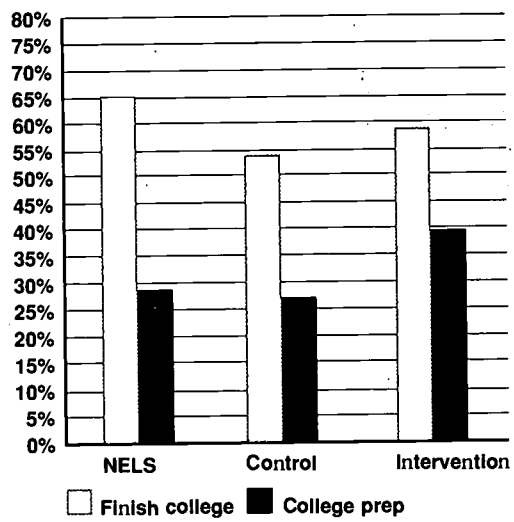
Figure 2
Percentage of eighth graders aspiring to at least finish college.



In making comparisons to the NELS study, the differences in SES and race/ethnicity of the populations from which these samples were drawn should be kept in mind. Thus, it should come as little surprise that the postsecondary aspirations of the NELS eighth graders are substantially higher than the control group's, since they come from a more affluent population. But when looking at the intervention group, the Hispanic and black intervention students show slightly higher aspirations than the NELS students.

If raised aspirations do have any positive correlation, with students' ultimate educational attainment, the findings in this section could be important. Do the higher aspirations of the white students in the control group reflect white students generally higher rates of participation in postsecondary education? Will the minority students in the intervention group now have a better chance of reaching postsecondary study because of their apparently increased aspirations? Measuring the correlations between aspirations and actual educational attainment is beyond the scope of this study, but the relationships should be examined in the future to see if they hold at their current levels.

Figure 3
Percentage of eighth graders aspiring to various education levels



Plans

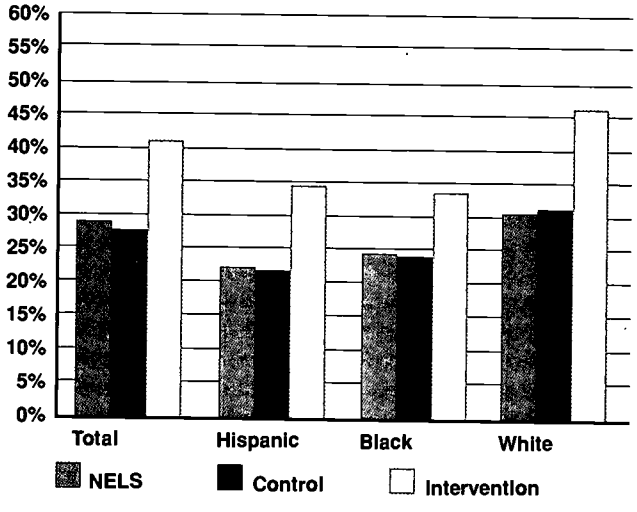
Aspirations mean little without action. One concrete step students take to reach their educational and career goals is to enroll in academic programs and courses that satisfy the prerequisites needed to attain their goals. Answers to the question, "In which program do you expect to enroll in high school?", suggest whether the- students were an the way to realizing their goals.

One finding of NELS '88 that received considerable attention is the large gap between students' aspirations and educational plans. While 65.5 percent of the students aspired to finish college, only 29.2 percent.planned to enroll in high school college prep programs (see Figure 3). The same disparity exists in this study among students in the control group, where 54.7 percent of the students aspired to at least finish college and only 27.9 percent planned to enroll in the college preparatory program. Among intervention students, however, there was *much less* of a gap between their educational goals and their plans. Fifty-nine percent aspired to finish college or go further, and 41.3 percent planned to enroll in college prep programs.

This is our study's most significant finding. That 41.3 percent of the intervention students compared to 27.9 percent of the control group and 29.2 percent of NELS expected in enroll in college prep courses shows that intervention students did *not just* aspire to reach college, but were planning ahead to reach their goals (see Appendix B for full breakdown of students' high school enrollment plans). Both the total intervention sample and the Hispanic and white subgroups' intervention students were more likely than their control group peers to have enrolled in "college prep courses," at a statistically significant level. While 9.5 percent more intervention black students than control black students enrolled in "college prep courses," this difference was not statistically significant at the .05 level (see Figure 4).

Figure 4

Percentage of eighth graders planning to enroll in a college prep program.



Why were there large disparities between aspirations and plans among students in the NELS and our control group? It could be caused by a variety of factors including: 1) a lack of understanding by the eighth graders of the prerequisites needed to reach their career/educati anal objectives; 2) students' laissez-faire attitude toward turning their opportunities into reality; or 3) school system that track students and thus prevent them from choosing the college prep program.

Did any of these factors result in narrowing the gap between aspirations and plans for the intervention group students?. The narrowing cannot be attributed to differences in tracking policies since the control and intervention students came from the same school systems. Perhaps the first two factors could be at work. If they were, it might mean that the intervention students had a better understanding of and/or less of a detachment from the educational planning process.

It can be concluded that something in the intervention schools is affecting students that is not affecting students in the control schools. Since one of the prime objectives of early educational awareness is to assist students with their educational planning, this correlation and its subsequent impact need to be studied further to see if there is a causal relationship.

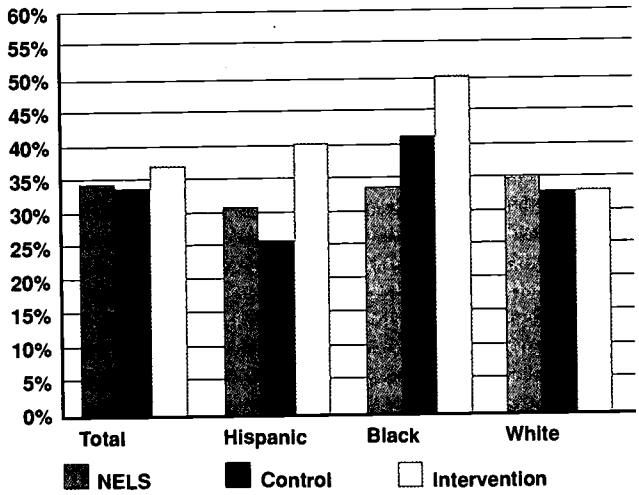
Career aspirations

The eighth graders were asked, "What kind of work do you expect to be doing when you are 30 years old?" They were given 12 career clusters to choose from, and "other," "not working" and "I don't know" options (see.Appendix A, survey question 2). Differences in the number of students interested in pursuing careers that require either a college degree or less than a college degree were examined.[2]

A slightly higher percentage of intervention students are interested in the college occupations compared to the control and NELS groups (see Figure 5). The differences in occupational aspirations between all control and intervention students were not statistically significant at the .05 level. The differences in occupational interests were more pronounced among some racial/ethnic subgroups. For example, Hispanic and black students in the intervention group were more likely than their peers in the NELS and control groups to have expressed interest in occupations that need college preparation. However, in comparing the interests of control and intervention students, only the Hispanic intervention students were more likely than their control group peers to have preferred the "college occupations" at a statistically significant level. There were no statistically significant differences in the occupational interests of white control and intervention group students (see Appendix B for a complete list of responses to the occupations question).

Figure 5

Percentage of eighth graders aspiring toward occupations requiring college.



Adult influence

How do the aspirations and plans of the students relate to the guidance they received from the adults in their lives? What is the relationship of parents to their children's lives at school? To ascertain whether the early educational awareness program had an impact, it was critical to see if th e parental expectations and involvement for the two groups were similar. Only then can we say with confidence that the program, not the parents, are causing the differences between the control and intervention groups. These issues were explored by asking the students a variety of questions.

First, student reports of the extent to which parents or guardians were involved with their schooling were examined. Table 3 shows that the intervention group reported more parental contact with school in the form of meeting with a teacher, visiting a classroom, or attending a school event. The intervention students were more likely than the control students to say their parents visited their classes, 25.9 versus 18.8 percent, and that their parents had attended a school event in which they had participated, 38.4 versus 28.4 percent. There were no statistically significant

differences in the proportions of students in each group who reported their parents had attended a school meeting or had spoken to their teachers or counselors. It is possible that the intervention students' parents had more contact with the school because of participation in the early awareness program.

Table 3

Percent of parents or guardians who have done the following as reported by eighth graders.

Parent activity	Total	Hispanic	Black	White
Intervention				
Attended a school meeting	32.6	32.4	20.5	36.7
Phoned or spoken to your teacher or counselor	57.1	56.8	50.0	63.3
Visited your class	25.9	34.2	9.1	26.5
Attended a school event in which you participated	38.4	27.9	29.5	44.4
Control				
Attended a school meeting	28.5	30.5	33.3	26.7
Phoned or spoken to your teacher or counselor	61.5	56.8	57.4	66.9
Visited your class	18.8	19.1	15.3	20.2
Attended a school event in which you participated	28.4	23.4	22.4	32.7

Does attending school events or meetings correlate with increased parental involvement in other areas? Table 4 shows that on the whole, there is little difference in the patterns of discussions with parents by intervention and control students. However, one major difference that appears in the "total" column suggests that the control parents may be more involved. While 37 percent of the control group students reported they had three or more discussions with their parents or guardians when selecting courses or school programs, only 28.6 percent of the intervention students had as many discussions. Since the intervention group's educational plans were much more in line with their career aspirations, one would expect them to have had more, not less, parental guidance in choosing educational programs *if* the parents had great influence on the congruence between plans and aspirations.

Table 4

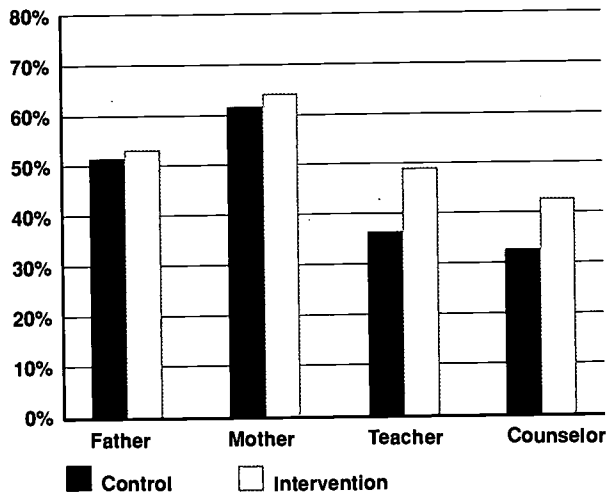
Percentage of eighth graders who have discussed school related activities with their parents or guardians

	Selecting courses or programs at school		School activities or events of particular interest to you		Things you've studied in class	
	Two or less times	Three or more times	Two or less times	Three or more times	Two or less times	Three or more times
Control						
Total	62.8	37.2	63.0	35.7	58.7	40.9
Hispanic	68.4	31.6	67.7	32.3	65.6	34.4
Black	68.3	31.7	67.8	32.2	64.4	35.6
White	59.6	40.4	60.7	39.3	56.1	43.9
Intervention						
Total	71.4	28.6	64.1	36.5	62.2	37.6
Hispanic	72.5	27.5	71.2	28.8	75.2	24.8
Black	84.1	15.9	68.2	31.8	63.6	36.4
White	66.0	34.0	55.8	44.2	55.5	44.5

Another way to compare differences in parent involvement is to examine parental expectations. What eighth graders in the samples think various adults want them to do after high school raises interesting questions. A slightly larger percentage of intervention students thought their parents or guardians wanted them to "go to college" right after high school than did the control group students (see Figure 6). But the differences between control and intervention students were much more pronounced when referring to adults in their schools. Fifty percent of the intervention group but only 38.8 percent of the control group reported that their teachers wanted them to "go to college."

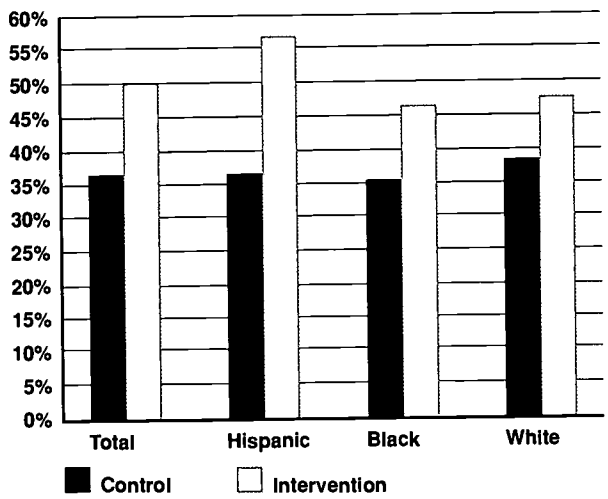
Likewise, 42 percent of the intervention group but only 33 percent of the control group reported that their counselors wanted them to "go to college." The difference for the teacher category is one of the largest in this study (see Figure 7), and given the influence of teacher expectations on student performance, it is an important one. (See Appendix B for a full breakdown of what eighth graders think adults want them to do after high school.)

Figure 6
Percentage of eighth graders who believe various adults think college is most important after high school.



Looking at the racial/ethnic groups we find that more Hispanic intervention students than control students said their fathers and mothers (and male and female guardians) thought going to college was the most important thing for them to do after high school at a statistically significant level (Figure 7). There were no other significant differences in student perceptions of parental or guardian consideration on the importance of college.

Figure 7
Percentage of eighth graders who believe their teachers think college is most important after high school.



Regarding adults in school, significantly more Hispanic and white intervention students than control students said their teachers thought college was most important. Black intervention students were more likely than black control students to say their teachers thought college was most important, but the proportions were not statistically significant. While the intervention students generally were more likely than the control students to say their counselors thought college was most important, the only racial/ethnic group for whom the proportions were significantly different at the .05 level was the Hispanic students, 47.6 percent for the intervention students versus only 30.8 percent for the control students. (See Appendix B for a complete breakdown by race of adult expectations regarding college.)

Why did a greater proportion of intervention Hispanic students say their parents want them to go to college? As the other tables indicate, there is no clear trend of increased parental involvement among this subgroup. Therefore, it is not clear what has caused this difference between the control and intervention students. Did their parents' expectations increase independently of the school or the early awareness program? Or did the informational materials sent home to the parents make an impact? Are the students projecting their raised expectations and increased knowledge about the importance of college onto their parents?

These findings raise complicated.questions about the relationship between early educational awareness programs and the teachers and counselors in the intervention schools. There is no way of knowing the cause of the perceived higher expectations among intervention group students. It is possible that the early awareness programs made students assume their teachers and counselors had higher aspirations for them. But it is equally possible that the teachers and counselors had higher expectations for the students because the teachers' participated in the early awareness programs. Or, the teachers and counselors may have already had higher expectations, which made these schools enthusiastic about having an early awareness program. The correlation between greater teacher and counselor expectations, higher educational aspirations, and the closer congruence between aspirations and plans among the intervention students have important implications for increasing students' access to higher education. But further research would be needed to determine why the students in the intervention schools believe their teachers, counselors and, in some cases, parents have higher expectations for them.

Conclusion

Over 85 percent of all eighth graders in this study—in school systems with four year high school dropout rates of 30 to 50 percent—indicated that they expect to continue their education after high school. This clearly suggests that these students value education. But can early educational awareness play a role in preventing these students from losing touch with their educational aspirations? we believe the findings of this study suggest that it can.

The intervention students' proportionally greater intention to enroll in college prep programs and their perception that their teachers have higher expectations for them present.the most pronounced differences between the control and intervention groups. These differences indicate something is happening in the schools with early educational awareness programs that is not happening in the other schools. This is significant because putting students on an educational path that meshes with their career and educational aspirations is critical to ensuring that they remain engaged with their studies. It also enhances the likelihood that they will achieve these aspirations. In addition, having a teaching staff that encourages high aspirations is equally as important to this end.

This raises important questions for further study. If early awareness programs increase student enrollment in college prep programs, does this translate into increased access to higher education for students? What is the relationship between higher teacher expectations and student enrollment patterns? If raised teacher expectations do positively affect enrollment patterns for students, then awareness programs that focus on raising teacher expectations should be investigated. This also may suggest that early educational awareness programs should include teacher workshops and training components..

Appendix A

8TH GRADE STUDENT SURVEY

Name _____

School _____

Grade _____ Date _____

Male _____ Female _____

Age _____

Put an X in the space of the appropriate answer.

1. In which Program do you expect to enroll in high school? (Mark one)
   a. College prep, academic. or specialized academic (such as science or math) _____
   b. Vocational or technical _____
   c. Business _____
   d. General high school program _____
   e. Other specialized high school (such as fine arts) _____

f. Other _____
g. I don't know _____

2. What kind of work do you expect to be doing when you are 30 years old? (Mark an X in the answer that comes closest to what you expect to be doing. If you have two or three things you think you may be doing, make your best guess and choose one answer.)

a. **Craftsperson or operator** (such as baker, mechanic, cook, machine operator, television repairer, telephone repairer. clothing presser, bus driver, taxi driver, truck driver) _____
b. **Farmer** _____
c. **Housewife/homemaker** _____
d. **Laborer** (such as farm hand, garbage collector, car washer. construction worker) _____
e. **Lawyer, doctor, dentist** _____
f. **Military, police, or security officer** (such as career officer or enlisted person in the armed forces, police officer, security guard. firefighter, detective) _____
g. **Teaching, business, or managerial** (such as professor, teacher, librarian, nurse, restaurant manager, buyer, business executive) _____
h. **Owning a business** _____
i. **Technical** (such as draftsman, medical or dental technician, computer programmer) _____
j. **Salesperson, clerical, or office worker** (such as sales clerk, real estate agent, newsstand operator, data entry clerk, secretary, bank teller) _____
k. **Science or engineering professional** (such as engineer or scientist) _____
1. **Service worker** (such as waiter, hairdresser, worker in fast food establishment, cook, janitor, beautician, childcare worker) _____
m. Other _____
n. Not **working** _____
o. I don't know _____

3. As things stand now, how far in school do you think you will get? (Mark one)

a. Won't finish high school _____
b. Will graduate from high school but won't go any further _____
c. Will go to vocational. trade or business school after high school _____
d. Will attend college _____
e. Will graduate from college _____
f. Will attend a higher level of school after graduating from college _____

4. Since the beginning of the school year, how often have you discussed the following with your parents or guardians? (Mark one X for *each* line)

	Not at all	Once or twice	Three or more times
a. Selecting courses or programs at school			
b. School activities or events of particular interest to you			
c. Things you've studied in class			

5. Since the beginning of this school year, has either of your parents or guardians done any of the following? (Mark one X for *each* line)

	Yes	No	I don't know
a. Attended a school meeting	_____	_____	_____
b. Phoned or spoken to your teacher or counselor	_____	_____	_____
c. Visited your classes	_____	_____	_____
d. Attended a school event such as a play, concert, sports competition, honor ceremony or science fair where you participated	_____	_____	_____

6. How often have you discussed planning your high school program with the following people? (Mark **one** X for ***each*** line)

	Not at all	Once or twice	Three or more times
a. Father or male guardian			
b. Mother or female guardian			
c. School counselor			
d. Teachers			
e. Other adult relatives or friends			
f. Friends or relatives about your own age			

7. What do the following people think is the most important thing for you to do right after high school? (Mark **one** X for ***each*** line)

	Go to college	Get full-time job	Enter a trade school or apprentice-ship program	Enter military service	Get married	I should do what I want	Don't care	I don't know	Does not apply
a. Father									
b. Mother									
c. Male guardian									
d. Female guardian									
e. Friends									
f. Close relatives									
g. School counselor									
h. Teachers									
i. Coach									

8. How far in school did both your parents go? (**One answer** for ***both*** A and B)

	A Father (or male guardian)	B Mother (or female guardian)
a. Did not finish high school		
b. Graduated from high school or equivalent (GED)		
c. After graduating from high school attended a vocational school, junior college. a community college, or another type of two-year school		
d. After graduating from high school, went to college but did not complete a four-year degree		
e. Graduated from college		
f. Master's degree or equivalent		
g. Ph.D., M.D. or other advanced professional degree		
h. Don't know		

9. (optional) Which. best describes you? (Mark **one**)

a. Asian or Pacific Islander	
b. Hispanic, regardless of race	
c. Black, not of Hispanic origin	
d. White, not of Hispanic origin	
e. American Indian or Alaskan native	

Appendix B

Table 5.
Percentage of eighth graders aspiring to various education levels

	won't finish high school	finish high school	Voc./trade business	attend college	finish college	Attend grad. school
NELS						
Total	1.5	10.5	9.4	13.1	42.8	22.7
Hispanic	2.6	14.8	10.7	17.1	33.2	21.5
Black	1.4	8.2	10.2	16.3	39.4	24.5
White	1.3	10.4	9.2	11.9	45.2	21.9
Control						
Total	1.0	12.3	13.0	18.9	32.7	22.0
Hispanic	1.1	14.7	21.1	23.2	25.3	14.7
Black	1.7	5.0	11.7	23.3	40.0	18.3
White	0.7	14.2	10.5	15.4	34.5	24.7
Intervention						
Total	0.8	13.5	10.4	16.4	34.8	24.2
Hispanic	0.9	15.2	9.8	17.9	38.4	17.9
Black	0.0	7.1	9.5	16.7	33.3	33.3
White	0.8	12.1	12.1	14.2	34.8	25.9

Table 6.
High school program eighth graders plan to enroll in (in percents)

NELS	College prep	Voc-Tech	General High school	Spec. Prog.	Other	Don't know
Total	29.2	18.0	14.3	5.4	8.1	25.1
Hispanic	22.5	22.3	10.6	5.3	10.4	29.0
Black	24.7	25.9	9.7	5.6	10.9	23.1
White	30.9	15.9	16.0	5.5	7.2	24.6

Intervention	College prep	Voc-Tech	Business[1]	General High school	Spec. Prog.	Other	Don't know
Total	41.3	22.2	5.1	15.0	2.5	2.9	11.1
Hispanic	34.8	20.5	5.4	18.8	2.7	1.8	16.1
Black	34.1	15.9	4.5	25.0	4.5	0.0	15.9
White	46.2	26.5	4.8	10.4	0.8	3.6	7.6

Control	College prep	Voc-Tech	Business[1]	General High school	Spec. Prog.	Other	Don't know
Total	27.9	26.1	9.7	14.6	5.7	4.1	11.9
Hispanic	22.1	33.7	13.7	11.6	3.2	6.3	9.5
Black	26.4	18.0	16.4	13.1	1.6	6.6	19.7
White	31.5	25.1	7.1	16.1	6.4	3.0	10.9

[1] Business was listed as a separate program in our survey. NELS listed "business" under "general high school program."

Table 7

Percentage of eighth graders aspiring to various occupations

	Crafts-person or operator	Farmer	Housewife homemaker	Laborer or farm worker	Military, police, security	Professional business, or managerial	Owning a business	Technical	Salesperson clerical or worker	Science or engineer	Service worker	Other	Won't be working	I don't know
NELS														
	4.2	1.0	2.3	0.6	9.6	28.7	6.2	6.2	2.8	5.9	4.9	17.0	0.2	10.5
Race/Ethnicity														
Hispanic	5.3	0.6	2.9	0.8	11.0	26.0	5.7	7.3	3.8	4.8	3.9	15.1	0.3	12.5
Black	3.2	0.1	0.9	0.6	11.5	29.4	5.8	8.0	2.9	4.2	6.4	16.3	0.4	10.4
White	4.3	1.2	2.5	0.5	9.0	28.7	6.3	5.7	2.7	6.1	4.9	17.7	0.2	10.2
Control														
	Crafts-person or operator	Farmer	Housewife homemaker	Laborer	Lawyer, doctor, dentist	Military, police, security	Teaching, business, management	Owning a business	Technical	Salesperson, clerical or worker	Science or engineering professional	Service worker	Other	Not working	I don't know
	4.9	0.0	1.4	1.4	19.1	7.6	11.1	8.0	6.8	3.9	3.7	9.2	13.8	0.0	8.6
Race/Ethnicity															
Hispanic	2.1	0.0	1.1	0.0	17.9	10.5	8.4	5.3	15.8	7.4	0.0	11.6	10.5	0.0	9.5
Black	3.3	0.0	3.3	1.6	23.0	4.9	13.1	11.5	4.9	0.0	4.9	0.0	13.1	0.0	16.4
White	6.4	0.0	1.1	2.2	18.0	7.5	10.5	8.6	4.9	4.1	4.5	10.9	15.0	0.0	6.4
Intervention															
	5.7	0.6	1.2	0.6	21.4	9.4	8.6	7.4	4.7	3.1	7.2	5.7	14.4	0.2	9.7
Race/Ethnicity															
Hispanic	11.8	0.9	0.9	0.0	23.2	10.7	10.7	5.4	8.0	1.8	6.3	2.7	19.6	0.0	8.0
Black	4.5	0.0	0.0	2.3	36.4	2.3	9.1	11.4	4.5	2.3	4.5	9.1	2.3	0.0	11.4
White	7.6	0.8	1.2	0.4	17.3	10.8	8.0	7.6	4.0	4.4	7.6	6.4	14.9	0.0	8.8

Table 8
What eighth graders think adults want them to do after high school

	Go to college	Get a full-time job	Enter trade school or apprentice-ship program	Enter military service	get married	I should do what I want	Don't care	I don't know	Does not apply
Control									
Father	52 2	7.0	4 2	2 1	0 2	11 2	3 2	11 4	8.5
Mother	62.1	8.2	5.5	0.8	0.8	14.7	1.9	4.0	1.9
Male Guardian	16.8	2.5	1.9	0.6	0 4	5.0	0.8	4.4	67.4
Female Guardian	16.4	2.7	1.5	0.0	0.4	5.7	1.0	4.6	67.7
Teacher	36.8	2.3	3.4	0.4	0.0	7.7	6.4	34.7	8.3
Counselor	33.3	1.5	3.4	0.4	0.0	7.7	5.6	37.8	10.3
Intervention									
Father	54.0	4.4	5.5	3.6	1.1	12.9	3.0	7.0	8.5
Mother	64.3	7.0	5.1	1.5	1.7	14.2	1.1	4.0	1.1
Male Guardian	19.0	2.5	1.1	1.1	0.4	5.9	1.5	3.4	65.1
Female Guardian	22.3	2.1	1.3	0.8	0.8	4.2	0.8	2.5	65.0
Teacher	50.0	2.1	3.8	0.4	0.2	7.7	3.8	28.9	3.0
Counselor	41.8	1.3	4.3	0.0	0.2	8.0	3.0	36.4	5.0

Table 9
Percentage of eighth graders who think various adults believe going to college is the most important thing for them to do after high school by race

Control	Father	Mother	Male guardian	Female guardian	Teacher	Counselor
Total	52.2	62.1	47.9	47.3	36.8	33.3
Hispanic	44.4	53.3	22.2	26.9	36.7	30 8
Black	65.0	78.0	52.2	50.0	35.6	29.3
White	53.0	62.6	54.5	52.9	38.5	35.7
Intervention						
	Father	Mother	Male guardian	Female guardian	Teacher	Counselor
Total	54.0	64.3	50.3	58.0	50.0	41.8
Hispanic	59.3	68.8	54.8	63.4	57.0	47.6
Black	64.3	64.3	50.0	71.4	44.5	34.1
White	51.4	64.3	51.7	55.3	47.7	39.7

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Effects of early educational awareness

Summary of First-Year Impacts and Program Operations

THE NATIONAL EVALUATION OF UPWARD BOUND

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Introduction

The Upward Bound program is intended to fill an important need: helping disadvantaged high school students realize the dream of a college education. An ongoing evaluation of the Upward Bound program, the largest of the federally funded TRIO programs, is yielding important new information about the program's effectiveness, showing that it affects students early on, and in positive ways.

The federal government spent $172 million on Upward Bound in 1996. Most students enter Upward Bound when they are in the ninth or tenth grade of high school. Once enrolled, students participate in a multiyear program of weekly activities during the school year and an intensive summer program that simulates college. In 1996, 45,000 students across the nation participated in the program, through projects offered by 601 grantees. The average federal cost per student was $3,800.

The U.S. Department of Education asked Mathematica Policy Research to evaluate Upward Bound's effectiveness. Mathematica was assisted by its subcontractors, Educational Testing Service, Westat, and Decision Information Resources. This publication summarizes Mathematica's findings on the program's short-term impacts on students and the academic content of its services. All impacts reported are statistically significant. In October 1997, information about longer term impacts on students will be available.

Findings in brief

- Two impacts emerge early on from Upward Bound. First, students who participate in the program expect to complete more schooling than similar students who do not. Second, the program has a positive impact on the number of academic courses participants take during high school.
- The students who benefit most initially are those with lower academic expectations.
- When impacts are examined by racial/ethnic groups, Hispanic students are found to benefit the most from Upward Bound.
- The program shows no impact in the first year on participants' high school grades.
- Many students leave the program in the first year.
- Most Upward Bound projects focus on providing a rich and challenging program.

A closer look at specific findings

EXPECTATIONS ABOUT CONTINUING IN SCHOOL

During the first year that students participate, Upward Bound bolsters the expectations for continued schooling that they and their parents hold.

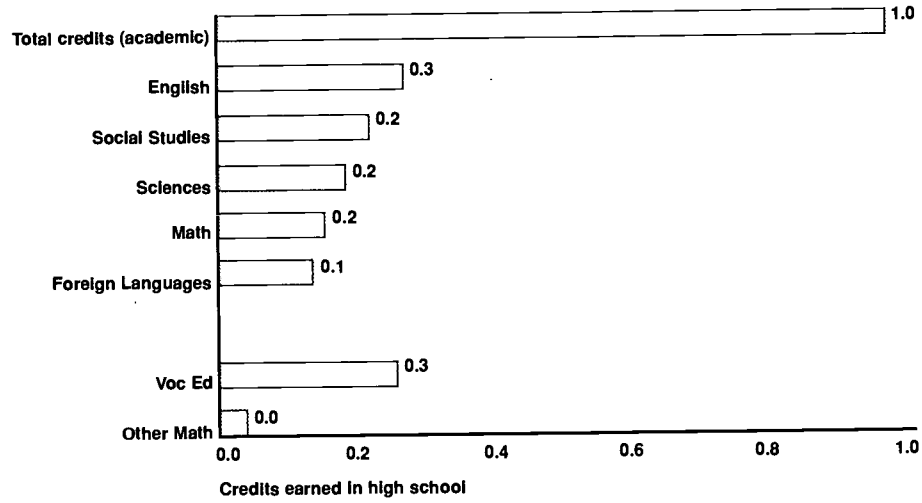
- Participants, expected to complete almost .25 more years of school on average than nonparticipants. Both groups of students typically experienced some decline in educational expectations between the time of application to the program and the follow-up survey. The decline, however, was much larger for the control group.
- According to participants, their parents expected them to complete about .3 more years of schooling than did parents of children in the control group. The expectations of participants' parents changed little; however, the expectations of control group parents declined substantially.

Credits Earned

Upward Bound increases the number of high school academic credits students earn during the first year of participation (see figure 1).

Figure 1

Short-term impact of Upward Bound on number of credits earned in high school



- Participants earned about one credit (Carnegie unit) more than nonparticipants. This impact is quite large when compared with the experiences of a typical high school student, who each year is expected to complete about five academic and/or elective credits.
- Participants earned substantially more credits in science, math, English, foreign languages, and social studies than nonparticipants.
- Participants also earned more credits than nonparticipants in vocational education and remedial math courses.

Students Who Benefit Most

Before participating in Upward Bound, almost three-quarters of applicants who are eligible for the program expect to complete at least a four-year college degree. But those who benefit most from Upward Bound are those who do not expect to complete a four-year college degree.

- Parents' educational expectations for their children increased when their children started Upward Bound with lower expectations. For example, Upward Bound increased fathers' expectations by 1.2 years for these participants.
- In contrast, parents of children with higher initial expectations for continued schooling neither increased nor decreased their expectations.

In terms of academic preparation, Upward Bound has a large positive impact on the high school credits that students with lower expectations earn in math, English, and social studies.

- Participants with lower educational expectations gained almost .6 more math credits than their counterparts in the control group; the corresponding figure for students with higher expectations was I credit.
- Participation in Upward Bound also led to an increase of about .8 credits in English and social studies for students with lower expectations and less than . I credit for those with higher expectations.
- Across all academic subjects, Upward Bound increased the number of credits earned by 3.1 for participants with lower expectations and by .5 credits for those with higher expectations.

Course taking for the three largest racial/ethnic groups in Upward Bound follows a consistent pattern: Hispanic students routinely experience larger gains from participation than either African American or white students.

- Hispanic students gained more than two credits; African American and white students gained less than .5 credits.
- Larger gains for Hispanics are apparent in several subjects: math, English, foreign languages, social studies, and vocational education.

First-Year Program Dropouts

Although Upward Bound has a substantial effect on educational expectations and course taking, the effect could be even larger if more students stayed in the program. Even in the first year, participants who leave Upward Bound early, for example, do not earn as many credits in high school as those who remain. Despite the value that comes from staying, many students do choose to leave Upward Bound in the first year. Furthermore, attrition from Upward Bound may be quite substantial by the time a group of entering students finishes high school.

- About 32 percent of those who entered Upward Bound before summer 1993 left by the end of the 1993–1994 academic year.
- Projections based on the experience of all students in the study suggest that 37 percent of those who participate will leave within the first 12 months.
- The program's dropout rate is very likely to increase at the end of the junior year, when project staff have reported that students are most likely to leave Upward Bound for summer and after-school jobs.

The Academic Challenge of Upward Bound

Most Upward Bound projects offer programs that emphasize academic preparation for college. Although an evaluation conducted in the 1970s by Research Triangle Institute prompted concern that Upward Bound projects did not devote enough time to academic instruction, recent evidence counters this view. The academic intensity of projects is evident from three perspectives.

- **Number of Courses Offered.** Fifty percent of the Upward Bound projects offer more than 17 academic courses in the summer and more than 10 academic courses during the regular school year. These courses are in addition to the tutoring, academic counseling, study skills, and SAVACT test preparation courses that almost all projects provide.
- **Nature and Content of Courses.** More than two-thirds of the projects focus on instruction that is not remedial. These projects either support the curricular content in the college preparatory program of the high school, or they adopt an enrichment focus that teaches content the schools are unlikely to teach. Most projects offer courses that reflect a traditional precollege preparatory curriculum and a wide range of subjects.
- **Course Requirements.** Eighty percent of the projects require students to complete at least six courses in the Upward Bound program. The majority prescribe the set of courses that must be taken. Projects that specify courses fall into two groups. The first, which represents one-third of all projects, emphasizes completing a "foundational" curriculum comprising reading, writing, algebra I and II, and geometry. The second, which represents a slightly larger fraction of projects, has a math/science orientation with requirements for precalculus, calculus, and science courses in addition to the foundational requirements.
- **Intensity of Contact with Students.** Among first-year participants, the typical number of academic and nonacademic sessions attended was 274. Two-thirds of these sessions took place during the summer and the rest took place during the academic year.

Summing Up

The short-term impacts of Upward Bound, even though they are not evident for every kind of outcome, are both impressive and important. For just one year of involvement, Upward Bound offers real benefits to students. It exposes them to academically challenging courses in addition to those they take in high school. It results in participants and their parents holding higher expectations about future education. It leads to participants' earning more academic credits in high school. Moreover, Upward Bound is particularly beneficial for students who initially expect to complete fewer years of education and who come from Hispanic origins.

While these results are promising, they give only a partial view of how well Upward Bound works. Will the initial results endure and become larger as participants graduate from high school and face the challenge of college? Will the grades of participants and other outcomes that have yet to show impacts change as a result of students' involve-

ment in the program? Answers to these questions will come as future reports about long-term program impacts are produced by the national evaluation.

About the study

The national evaluation of Upward Bound is a six-year, longitudinal study commissioned by the Planning and Evaluation Service of the U.S. Department of Education. The evaluation incorporates data from many sources, including nationally representative samples of regular Upward Bound grantees and their target schools, and a nationally representative sample of students who applied to the program between 1992 and 1994 and were randomly assigned either to Upward Bound or to a control group.[1] Additional data were collected through field visits to a representative sample of 20 Upward Bound projects in the spring and the summer of 1993.

Because of the study design, findings on the impact of Upward Bound are generalizable to all Upward Bound projects hosted by two- and four-year colleges. The design uses a nationally representative sample of 67 Upward Bound grantees at two- and four-year colleges. Of students who were eligible applicants to these 67 projects, the evaluation randomly assigned 1,524 to Upward Bound and 1,320 to a control group. Short-term impacts are based on comparing students in the two groups across a range of measures, including high school grades and course taking, attitudes and educational expectations, misbehavior in school, and parental involvement. All students completed an initial survey form before they were randomly assigned to Upward Bound or the control group; more than 97 percent responded to a follow-up survey in 1994. Students' high school transcripts also were collected in 1994. The survey of Upward Bound grantees collected detailed information about project operations and staffing for the 1992-1993 year. Questionnaires were mailed to a nationally representative sample of 244 projects, and 92 percent of the questionnaires were returned. The survey of target schools collected information from principals and Upward Bound liaisons in the schools (generally school guidance counselors) on a variety of topics, including the educational climate, availability of precollege programs in the school, contacts with Upward Bound, and perceptions of program effectiveness. Target school questionnaires went to a sample of 754 middle schools and high schools; 96 percent of these schools responded.

Note

[1] The focus of the national evaluation of Upward Bound is the regular Upward Bound program. Projects funded by the Upward Bound Math/Science initiative or Veteran's Upward Bound projects are not part of the national evaluation.

The Short-Term Impact of Upward Bound: An Interim Report (1997)

BACKGROUND

Upward Bound, which was initiated in 1965 as part of the War on Poverty, is a federal precollege program designed to help economically disadvantaged students complete high school, enter and succeed in postsecondary education. It is the oldest and largest (based on total funding) of the federal TRIO programs, all of which share the objective of helping disadvantaged students achieve success at the postsecondary level.

At present, there are more than 500 Upward Bound projects serving 42,000 students. At least two-thirds of each project's participants must be from households that have low income (under 150% of poverty) and where neither parent has graduated from college. In practice, about 80 percent of Upward Bound applicants satisfy both criteria, with the remainder from either low income or first-generation college families.

Upward Bound projects offer extensive academic instruction as well as counseling, mentoring and other support services. Students meet throughout the school year and generally participate in an intensive residential summer program that last from five to eight weeks. Most students—about 90 percent — enter Upward Bound while in 9th or 10th grade, and some remain with the program through 12th grade. Upward Bound projects are generally operated by two or four-year colleges. The annual average cost per participant is about $3,600.

EVALUATION OBJECTIVES AND METHODS

This evaluation report describes the short-term impact of Upward Bound during the first year or two of high school. Data is currently being collected to assess longer term effects of Upward Bound on high school graduation, college entry and achievement, and will be addressed in subsequent reports. The main questions addressed in this report are:

- What types of students are attracted to Upward Bound and how long do they participate in the program?

- What services do students receive?
- What is the impact of Upward Bound on students' education related outcomes. Do some students benefit more than others from participation in Upward Bound?

Impact findings are based upon a nationally representative sample of 67 Upward Bound! projects hosted by two and four year colleges, from which 2700 eligible applicants were randomly assigned to Upward Bound or to a control group. Short-term impacts are estimated by comparing students in the two groups on a range of measures, including grades, course-taking, attitudes and educational expectations. A baseline survey was conducted beginning in December 1992, with a follow-up survey undertaken in Spring 1994. High school transcripts were collected following the 1993–94 school year.

FINDINGS

Enrollment and persistence

Comparing Upward Bound applicants with other students from similar grades and from families with low socio-economic status shows that Upward Bound applicants have higher educational attainment expectations, are better prepared academically, and have parents who are generally more involved in their children's school related activities.

Most students (about 90 percent) enter Upward Bound in the 9th or 10th grade, but about 20 percent of the applicants offered program openings choose not to participate, and almost 40 percent of those who accept an offer drop out of Upward Bound within 12 months. The most common reason for leaving Upward Bound is to take a job. Participants planning to complete college are more likely to remain in Upward Bound than are other participants.

Services

In addition to tutoring and counseling services, Upward Bound participants receive considerable academic instruction from the projects -particularly in English, math and science. Overall, the typical participant attends more than 270 sessions throughout the year.

Short-term impacts

Participants and parents of participants had higher educational expectations than members of the control group. Upward Bound participants earned significantly more academic credits during the period covered by this study, particularly in English, social studies and science and math. The average participants was exposed to approximately 17 percent more academic instruction than the control group.

Impacts related to credits are in part a product of some high schools offering credits for completing courses offered through Upward Bound, and in part a product of students earning additional credits for high school courses.

Participants who persist in Upward Bound for a longer period earn more credits in high school than other participants.

Certain sub-groups are more likely to experience short-term benefits from Upward Bound than others. Although Upward Bound participants with high and low educational expectations (do not expect to complete at least a four-year college degree) both earn more academic credits, students with low educational expectations experience a much larger gain. The study also found positive short-term effects for Hispanic students.

Other student-related outcomes such as grade point average, attitudes, parental involvement and students' behavior in school were not affected by participation in Upward Bound.

CONCLUSIONS

Results in this report describe the short-term impacts of Upward Bound while most students are high school freshmen and sophomores. The students in this study have not yet progressed far enough in school to estimate the program's effects on high school graduation, college entry or college attainment. However, findings about the positive effects of Upward Bound upon academic course-taking are encouraging, particularly given concerns raised in the past about the academic preparation provided Upward Bound students.

Note

[1].The evaluation is limited to regular Upward Bound projects. It does not include Veterans projects or projects focused on math-science curriculum.

Reports from the national evaluation of Upward Bound

Two other major reports describing the Upward Bound program and its short-term impacts are available:

Moore, Mary T. *A 1990s View of Upward Bound: Programs Offered, Students Served, and Operational Issues.* Washington, DC: U.S. Department of Education, Planning and Evaluation Service, 1996.

Myers, David E. and Allen Schirm. *The Short-Term Impacts of Upward Bound: An Interim Report* Washington, DC: U.S. Department of Education, Planning and Evaluation Service, 1996.

6

Effects of early educational awareness

Toward Resiliency: At-Risk Students Who Make It to College

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Highlights

The aim of this study was to determine whether student, parent, and peer engagement factors that contributed to at-risk students' success in graduating from high school continued to be important in making the transition from high school to postsecondary education. Only students who were considered at moderate to high risk of dropping out of high school were included in the analysis (about one-quarter of 1992 high school graduates). They were identified as those exhibiting two or more of the following six risk factors: family in the lowest socioeconomic quartile, from a single-parent home, earned grades of C's or lower from 6th to 8th grade, held back a grade, changed schools two or more times outside of the normal progression, or have an older sibling who dropped out of high school. Key findings are as follows.

- Parent and peer engagement indicators were especially strong influences on postsecondary enrollment. Moderate- to high-risk youth whose parents frequently discussed school-related matters with them in high school had much higher odds of both 4-year college enrollment and enrollment in any postsecondary education, compared with their peers whose parents had no discussions with them. Parents' educational expectations also exerted a strong influence on whether or not moderate- to high-risk teens enrolled in any postsecondary education.
- Compared to students whose friends did not have college plans, students who reported that most or all of their high school friends had plans for enrolling in a 4-year college were far more likely to enroll in a 4-year college themselves. The importance that friends attributed to learning activities such as studying and getting good grades had a strong positive effect on whether or not students enrolled in any postsecondary education, but not on whether they enrolled in a 4-year college.
- Participating in college preparation activities increased the odds of enrolling in postsecondary education. Gathering information about financial aid and talking to individuals about aid increased the odds of enrolling in any postsecondary education, while getting help with preparing for entrance exams and the college application process increased the odds of enrolling in a 4-year college.
- Moderate- to high-risk students who reported participating in college outreach programs increased their odds of enrolling in a 4-year college nearly twofold.

Foreword

In December 1997, the National Center for Education Statistics (NCES) published Confronting the Odds: Students at Risk and the Pipeline to Higher Education (NCES 98-094), prepared by Laura Horn of MPR Associates. This study was one in a series known as the Postsecondary Education Descriptive Analysis Reports (PEDAR). The PEDAR reports are based principally on data collected in NCES' longitudinal studies, and have covered such topics as transfer behavior, part-time undergraduates, minority student participation, packaging of financial aid, and others (these and other NCES publications are available for downloading at this website: *http://nces.ed.gov*).

The National Institute on Postsecondary Education, Libraries, and Lifelong Learning (PLLI) is housed in the same organizational unit of the U.S. Department of Education as NCES, and its staff interacts frequently with NCES, serving on technical review panels, performing data editing services, and assisting in the development of surveys.

In the course of reviewing drafts of Confronting the Odds, PLLI was intrigued by the possibility of taking a more focused look at the "at-risk" population in relation to postsecondary enrollment and persistence. Specifically, we wanted to concentrate on moderate- to high-risk high school students who overcame the odds and enrolled in higher

education, and to provide some idea of how this population was distributed by race—ethnicity. We thus asked MPR Associates to conduct a second analysis of the issue.

We were also interested in an alternative statistical methodology, namely, logistic regression and the explanatory power of the "odds ratios" produced by this procedure. One might note, for example, that 80 percent of the students who enrolled in a 4-year college reported that all or most of their friends had planned to attend college (see Confronting the Odds, p. 35). That statement, however, is not as persuasive as the observation in this document, that the odds of attending a 4-year college are 6 times as high if all or most of your friends plan to attend college than if none of your friends plans to attend. Odds ratios can be powerful tools for high school counselors, teachers, and college outreach workers.

The data set used in both Confronting the Odds and Toward Resiliency is the National Education Longitudinal Study of 1988 (NELS:88). The most recent survey of this group (1994) took place two years after their scheduled high school graduation. At that time, 75 percent of the high school graduates had entered postsecondary education, and 60 percent were still enrolled (Berkner and Chavez 1997). Whether these students will complete degrees or whether others will return to higher education will not be known until after the next scheduled NELS:88 survey in the year 2000. Toward Resiliency helps establish some key lines of analysis on persistence and completion that will be used at that time.

Introduction

As the American economy demands a more educated and highly trained work force, it has become increasingly important for American youth to continue their education beyond high school. Given these demands, it is encouraging to note that nearly two-thirds of 1988 8th-graders had enrolled in some form of postsecondary education by 1994, two years after most completed high school (Sanderson et al. 1996), and that three-quarters of high school graduates had enrolled (Berkner and Chavez 1997). Nonetheless, there were still great disparities in postsecondary enrollment when socioeconomic status was considered: 36 percent of students from families in the lowest socioeconomic quartile had enrolled in some postsecondary education, while the vast majority (88 percent) of students in the highest quartile had done so. The purpose of this research, however, is not to present evidence concerning well-known and documented disparities, but to explore why certain students identified as at risk of school failure managed to succeed in school and enroll in postsecondary education despite social and educational disadvantages. How are these students different from their less successful at-risk counterparts?

The study took advantage of a considerable amount of research that has been conducted by MPR Associates, Inc. for the National Center for Education Statistics in two areas: 1) at-risk secondary school populations, and 2) issues related to postsecondary access and choice. The current study combines these two areas by identifying students at risk according to factors that increase their likelihood of dropping out of high school, and then examines the experiences of at risk youth who not only managed to graduate from high school, but who also entered postsecondary education.

Background

Chen and Kaufman recently expanded on research first conducted by Kaufman and Bradby (1992), who used the 1988 National Education Longitudinal Study (NELS:88) to profile 8th graders at risk of dropping out of school between 8th and 10th grade. Chen and Kaufman's study (1997) extended the time frame through the second follow-up (1992) when most of the cohort graduated from high school, to compare at-risk students who dropped out of high school with their resilient counterparts (at-risk students who graduated). To understand why resilient students remained in school despite the odds against their doing so, factors such as family stability, parental involvement in school activities, students' attitudes about learning, and peer associations were examined and compared to the experiences of students who dropped out. The results revealed that resilient students had more positive attitudes about school, had more cohesive families, had parents who were more supportive of their schooling, and had peers more engaged in school than did dropouts. The study concluded that these positive experiences play a protective role in reducing the impact of risk on resilient students.

The analysis reported here identifies students at risk according to similar risk factors that were defined in Chen and Kaufman's study and tracks the progress of the resilient at-risk students to see if they continued their education beyond high school. The analysis also builds on the findings from a descriptive study recently published by the

National Center for Education Statistics (Horn 1997), which described high school graduates' experiences in the "pipeline" to higher education. The pipeline refers to five junctures or steps necessary to make the successful transition from high school to college. These include having a bachelor's degree goal, being at least minimally prepared academically to attend college, taking entrance exams, applying to college, and enrolling in college. The pipeline study determined how at-risk students differed from their counterparts who were not at-risk in terms of their college pipeline experiences and further compared at-risk students who successfully enrolled in a 4-year college with their at-risk counterparts who did not. The results indicated that even among students who were at least minimally prepared academically to enroll in college, at-risk students were less likely to take entrance exams and apply to college than were their counterparts who were not at risk. The results further suggested that there were certain student, parent, and peer engagement indicators that distinguished "successful" at-risk students-those who went on to college from their at-risk peers who did not enroll.

This analysis expands on the pipeline study by using logistic regression models to determine if the engagement indicators analyzed in previous studies increased the likelihood of moderate- to high-risk students enrolling in post-secondary education, after controlling for risk factors, math course taking, and achievement measures, as well as activities presumed to be important for preparing for college.

Data, definitions, and methods

RISK, OUTCOMES AND ENGAGEMENT

Risk factors

In earlier studies conducted on the base-year and first follow-up NELS surveys (8th- and 10th-graders), many factors were identified as being associated with an increased probability of school failure and dropping out (Kaufman and Bradby 1992). These factors were often highly correlated with students' demographic characteristics, especially gender, race-ethnicity, and socioeconomic status (SES). However, after controlling for these demographic factors, there were five factors related to family background or early school experiences that still substantially increased the odds of dropping out of high school.' These factors included being from a single parent household, having an older sibling who dropped out of high school, changing schools two or more times other than the normal progression (e.g., from elementary to middle school), having poorer than average grades, and repeating an earlier grade. Therefore, in this analysis, SES and the additional five risk factors (listed below) are used to identify 8th-graders at risk.2

- Lowest socioeconomic quartile
- Single-parent family
- Older sibling dropped out of high school (asked in the 10th grade)
- Changed schools two or more times from 1st to 8th grade
- Average grades of C's or lower from 6th to 8th grade
- Repeated an earlier grade from 1st to 8th grade

Students were further identified according to their level of risk based on the number of risk factors they had accumulated. One risk factor was considered low risk; two risk factors constituted moderate risk; and students with three or more risk factors were considered to be at high risk of dropping out. In their preliminary analysis, Chen and Kaufman (1997) found that students who showed at least two risk factors had much higher odds of dropping out of school than students who had no risk factors. In terms of odds, compared with students with no risk factors, students who had one risk factor were 4 times more likely to drop out of school, students who had two risk factors were 13 times more likely to drop out; and students who had three or more risk factors were 30 times more likely to drop out. For this study, therefore, we focused on students at moderate or high risk.

Table 1 identifies 1992 high school graduates according to their risk status. Approximately one-third were at low risk (one risk factor), 16 percent were at moderate risk (two risk factors), and 9 percent were at high risk (three or more risk factors). The average number of risk factors among all 1992 high school graduates was about 1.7. This analysis includes only students considered at moderate or high risk. They constitute about one-quarter of the cohort of 1992 high school graduates (figure 1).

Table 1

Percentage of 1992 high school graduates, by level of risk and the average number of risk factors among all high school students

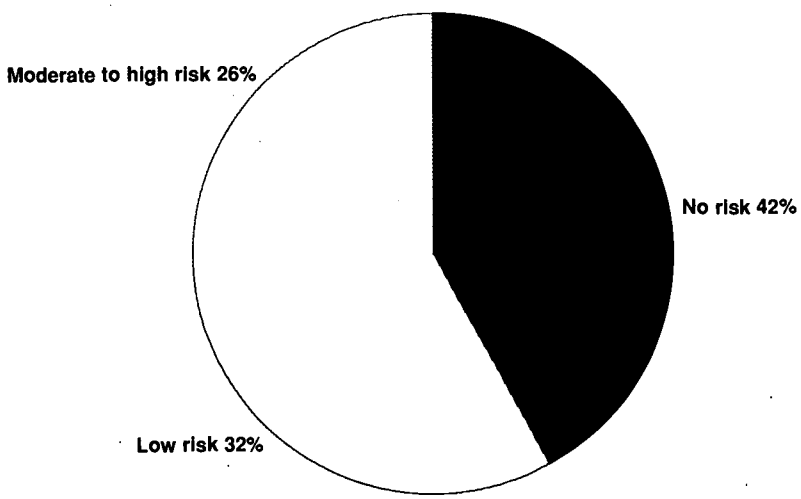
	Low risk	Moderate risk	High risk	Average number of risk factors
Total*	32.2	16.3	9.3	1.7
Individual risk factors				
Changed schools two or more times from 1st to 8th grade (other than natural progression)	46.8	29.9	23.3	1.9
Lowest SES quartile	31.1	34.1	34.7	2.2
Average grades C's or lower from 6th to 8th grade	31.2	36.3	32.5	2.2
Single parent family	32.7	34.1	33.3	2.2
Older sibling(s) dropped out of high school	22.6	35.5	41.9	2.4
Held back one or more grades from 1st to 8th grade	19.9	38.7	41.4	2.4

*The three risk categories account for 57.8 percent of the sample of high school graduates. The remaining 42.2 percent constitute the "no risk" group.

Source: U.S. Department of Education, National Center for Education Statistics, *Confronting the Odds: Students at Risk and the Pipeline to Higher Education* (NCES 98-094). Data from the National Educational Longitudinal Study (NELS:88/94), Data Analysis System.

Figure 1

Percentage distribution of 1992 high school graduates, by risk status.



Source: U.S. Department of Education, National Center for Education Statistics, National Educational Longitudinal Study (NELS:88/94), Data Analysis System.

As shown in table 2, the most common risk factor was changing schools two or more times (27 percent) followed by being in the lowest socioeconomic quartile (18 percent) and having grades of C's or lower from 6th to 8th grade (17 percent). Approximately 15 percent of NELS high school graduates lived in a single parent home as 8th-graders and I I percent either had been held back a grade or had siblings who dropped out of high school. Those who were held back or who had a sibling who dropped out of school had more risk factors on average than students with other risk factors (see table 1). Table 2 also illustrates how the risk factors are interrelated. For example, among high-risk students, two thirds had changed schools two or more times. The same proportion (66 percent) were in the lowest socioeconomic quartile, and more than half of high risk students had grades of C's or lower or had single parents.

As might be expected, given the inclusion of low SES as a risk factor, students at moderate or high risk were more likely to be African American or Hispanic than were students at lower risk (table 3). In fact, African Americans were about twice as likely to be at high risk (22 percent) than they were to be at low risk (10 percent).

Table 2

Percentage of 1992 high school graduates with each risk factor, by risk status and all other risk factors

	Changed schools two or more times from 1st to 8th grade	Lowest SES quartile	Average grades C's or lower from 6th to 8th grade	Single parent family	Older sibling(s) dropped out of high school	Held back one or more grades from 1st to 8th grade
Total	26.8	18.2	16.7	15.3	11.2	11.2
Risk status						
Low risk	38.7	17.1	16.1	15.3	7.8	6.9
Moderate risk	49.6	37.1	37.0	31.7	24.4	26.9
High risk	66.4	66.0	57.9	54.0	48.7	51.2
Number of school changes from 1st to 8th grade						
Two or more times	100.0	18.8	20.3	19.2	14.6	16.6
Less than two	0.0	16.9	15.0	13.6	9.4	8.7
SES in 1988						
Lowest quartile	29.0	100.0	26.1	25.0	24.4	20.3
Middle to high quartiles	26.3	0.0	14.7	13.1	8.1	9.3
Average grades from 6th to 8th grade						
C's or lower	33.0	28.1	100.0	21.1	16.6	23.2
A's or B's	25.5	16.0	0.0	14.1	9.8	8.8
Family composition in 1988						
Single parent family	34.0	29.7	23.2	100.0	17.4	17.4
Other than single parent	25.5	16.1	15.6	0.0	9.8	10.1
Older siblings who left high school						
One or more	35.0	38.8	24.7	23.8	100.0	20.8
None left or no siblings	24.6	14.8	15.2	13.9	0.0	9.6
Ever held back 1st to 8th grade						
Held back at least once	40.08	31.3	33.1	23.1	20.4	100.0
Not held back	24.9	15.5	13.7	13.8	9.5	0.0

Note: This table represents percentages of the row categories. For example, the first row under "Risk status" reads: Among low-risk high school graduates, 38.7 percent changed schools two or more times, 17.1 percent were in the lowest socioeconomic quartile, 16.1 percent had C's or lower, and so on.

Source: U.S. Department of Education, National Center for Educations Statistics, Confronting the Odds: Students at Risk and the Pipeline to Higher Education (NCES 98-094). Data from the Natioanl Education Longitudinal Study (NELS: 88/94), Data Analysis System.

Since parents' education is a component of SES, it is also not surprising that moderate- to high-risk students also had less educated parents than their lower risk counterparts (table 4). More than half (58 percent) of high-risk students had parents who had completed no more than a high school education, compared with about one-quarter of low-risk students.

POSTSECONDARY OUTCOME MEASURES

We analyzed three outcomes in this study: two enrollment outcomes and one indicator of postsecondary education persistence. All of the outcome measures are dichotomous, meaning that students either achieved the outcome or they did not. The two enrollment outcomes are 4 year college enrollment by 1994 versus all other behaviors (including enrollment in less-than- 4year institutions), and enrollment in any postsecondary education (from short-term vocational programs to bachelor's degree programs) within the same time period versus no enrollment. Table 5 shows where students enrolled relative to their risk status. It is clear from this table that students at moderate or high risk were far less likely than those at low risk or no risk to enroll in a 4-year college and far less likely to enroll in any postsecondary education. For example, just 14 percent of high-risk students enrolled in a 4-year college, and nearly half did not enroll in any postsecondary education, compared with 45 percent and 24 percent, respectively, of their

Table 3

Percentage distributions of 1992 high school graduates according to race-ethnicity, by risk status and individual risk factors

	Race-ethnicity				
	Asian/ Pacific Islander	Hispanic	Black, non-Hispanic	White, non-Hispanic	American Indian/ Alaskan Native
Total	4.6	9.5	10.9	74.1	1.0
Risk status					
No risk	3.7	4.8	5.4	85.4	0.7
Low risk	4.4	10.8	9.8	74.3	0.7
Moderate risk	3.3	11.9	16.0	67.6	1.3
High risk	3.1	13.7	21.9	60.2	1.2
Individual risk factors					
SES in 1988					
Lowest quartile	3.2	21.7	20.1	53.7	1.3
Middle to high quartiles	4.1	6.2	8.1	80.8	0.8
Family composition in 1988					
Single parent family	1.7	8.6	24.1	64.5	1.1
Other than single parent	4.3	9.0	7.9	78.1	0.9
Number of school changes from 1st to 8th grade					
Two or more times	5.6	10.2	12.2	71.1	0.9
Less than two	3.2	7.6	9.2	79.3	0.7
Average grades from 6th to 8th grade					
C's or lower	3.1	10.8	11.9	72.9	1.3
A's or B's	4.0	8.5	10.0	76.7	0.8
Ever held back 1st to 8th grade					
Held back at least once	3.2	11.0	15.7	68.7	1.4
Not held back	4.0	8.5	8.6	78.2	0.8

Note: Details may not sum to 100 percent because of rounding.

Source: U.S. Department of Education, National Center for Education Statistics, Confronting the Odds: Students at Risk and the Pipeline to Higher Education (NCES 98-094). Data from the National Education Longitudinal Study (NELS: 88/94), Data Analysis System.

Since parents' education is a component of SES, it is also not surprising that moderate-to high-risk students also had less educated parents than their lower risk counterparts (table 4). More than half (58 percent) of high-risk students had parents who had completed no more than a high school education, compared with about one-quarter of low-risk students.

low-risk counterparts. Furthermore, as the level of risk increased, the likelihood of enrolling decreased. The table also shows that students with each individual risk factor were less likely to enroll in a 4-year college and, with one exception,3 were less likely to enroll in any postsecondary education than students without the risk factor.

The third outcome was an indicator of persistence in postsecondary education, a measure that characterizes students according to postsecondary education enrollment patterns known to reduce their chances of attaining a degree (Carroll 1989, Tuma and Geis 1996, Berkner et al. 1996, and Horn 1996). These patterns include delaying postsecondary education by a year or more after high school graduation, beginning postsecondary education on a part-time basis, or not attending continuously from the time of initial enrollment (i.e., stopping for four or more months). If students exhibited none of these enrollment behaviors (they enrolled full time within a year after high school graduation and attended continuously), they were considered to have a better chance at persisting to degree completion. These students were identified as exhibiting strong postsecondary education persistence.

ENGAGEMENT INDICATORS

The purpose of this study is to better understand the experiences of moderate- to high-risk youth who not only managed to graduate from high school, but who enrolled in higher education. Thus, we investigated the effect of engagement behaviors of students, their parents, and their peers on the likelihood of enrolling in postsecondary education. We also determined to what effect, if any, certain college preparation activities had on enrollment

Table 4

Percentage distribution of 1992 high school graduates according to parents' highest educational attainment, by risk status and individual risk factors.

	Parents' highest education		
	High school or less	Some postsecondary education	Bachelor's degree or higher
Total	26.5	41.0	32.5
Risk Status			
No risk	11.8	41.9	46.4
Low risk	24.9	43.0	32.1
Moderate risk	42.6	41.0	16.4
High risk	57.5	36.3	6.2
Individual risk factors			
SES in 1988.			
Lowest quartile	76.1	23.6	0.3
Middle to high quartiles	13.7	45.7	40.7
Family composition in 1988			
Single parent family	37.3	43.3	19.4
Other than single parent	23.1	41.2	35.7
Number of older siblings who left high school			
One or more	42.9	43.6	13.5
None left or no siblings	23.7	40.3	36.0
Number of school changes from 1st to 8th grade			
Two or more times	23.1	42.8	34.1
Less than two	24.9	41.5	33.6
Average grades from 6th to 8th grade			
C's or lower	37.8	46.0	16.2
A's or B's	22.7	40.7	36.6
Ever held back 1st to 8th grade			
Held back at least once	36.8	44.5	18.8
Not held back	23.0	41.4	35.6

Note: Details for percentage distribution my not sum to 100 percent because of rounding.

Source: U.S. Department of Education, National Center for Education Statistics, *Confronting the Odds: Students at Risk and the Pipeline to Higher Education* (NCES 98-094). Data from the National Education Longitudinal Study (NELS: 88/94), Data Analysis System.

outcomes. The engagement indicators included in the models are strongly associated with the likelihood of at-risk students completing high school (Chen and Kaufman 1997).

STUDENT ENGAGEMENT

Level of high school attendance and the number of extracurricular activities students reported participating in were used as indicators of student engagement. The attendance variable is a composite based on a factor analysis of several items asked of students regarding how many times they had been late for school, skipped school, or been absent. The number of extracurricular activities was a direct item asking students to report the number of activities in which they had participated. Such activities included involvement in student government, band, service clubs, and so on.

PARENT ENGAGEMENT

Parent engagement indicators were based on two parent involvement measures: their educational expectations for their child (reported in 1990 when most students were in the I 0th grade) and how involved they were with their child's schooling (reported in 1992). The involvement indicator is a composite based on a factor analysis of several items asking the parent(s) to report on the frequency with which they discussed the following matters with their child: the selection of high school courses, school activities of particular interest to their child, topics their child has studied in class, plans for taking entrance exams, and applying to colleges.

Table 5

Percentage distribution of 1992 high school graduates according to the first postsecondary institution attended, by risk status and individual risk factors

	Type of institution first enrolled by 1994			
	4-year institution	Public 2-year institution	Other less-than 4-year institution	Never enrolled
Total	45.1	25.7	4.4	24.8
Risk status				
No risk	63.5	21.9	2.4	12.2
Low risk	45.1	26.0	5.2	23.8
Moderate risk	27.0	28.4	5.9	38.7
High risk	14.0	29.7	7.1	49.2
Individual risk factors				
SES in 1988				
Lowest quartile	21.7	25.2	6.3	46.8
Middle to high quartiles	52.1	25.2	3.9	18.8
Family composition in 1988				
Single parent family	38.6	28.1	4.7	28.7
None left or no siblings	49.8	24.8	4.2	21.2
Number of school changes from 1st to 8th grade				
Two or more times	39.8	28.0	6.1	26.1
Less than two	50.0	24.1	3.6	22.3
Average grades from 6th to 8th grade				
C's or lower	16.3	29.8	7.7	46.2
A's or B's	52.8	24.2	3.7	19.3
Ever held back 1st to 8th grade				
Held back at least once	20.6	30.0	5.3	44.2
Not held back	51.2	24.4	4.1	20.3

Note: Details for percentage distribution may not sum to 100 percent because of rounding.

Source: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study (NELS: 88/94), Data Analysis System.

PEER ENGAGEMENT

Two indicators of peer engagement were included in the models (both of which were reported by the student). The first is a measure of importance that students believed their friends attributed to learning activities. The learning activities indicator was based on a factor analysis of items asked of students in 1990 regarding how important they thought their friends considered the following activities: attending classes, studying, getting good grades, finishing high school, and continuing education past high school. The second peer involvement indicator was based on how many students' friends had plans to attend a 4-year college.

COLLEGE PREPARATION ACTIVITIES

A number of variables in the NELS survey indicated the frequency with which students reported participating in college preparation programs or activities. These activities included gathering information about financial aid, participating in outreach programs such as Upward Bound, taking special courses for entrance exam preparation, and receiving help from their high school teachers or staff in preparing college and financial aid applications. A number of these variables are composites made up of several related items. For example, whether or not students got help in preparing for entrance exams is constructed from student responses to questions about taking a special course in high school or from a commercial test service, getting private tutoring, studying test booklets, or using special videotapes or test-related computer programs to prepare for exams. Whether or not students received help in the college application process was based on students' answers to questions about assistance from their high school in filling out college or financial aid applications, writing their application essay, or getting days off to visit colleges.

SAMPLE OF AT-RISK STUDENTS

The sample for this study was drawn from the National Education Longitudinal Study (NELS:88/94). Students were included in the analyses if they: (1) had two or more risk factors; (2) had graduated from high school in 1992; and (3) had data on the outcome variables examined in the analysis. Application of these selection criteria resulted in samples ranging from about 1,700 to 2,900 students (depending upon which outcome was used).

Statistical methods

Because all the outcome measures in the study are dichotomous (O=No, I=Yes), we used logistic regressions to determine the independent effect of the engagement variables on the outcomes. The results are presented in terms of odds ratios, a measure of the relative odds of achieving a particular outcome (such as enrolling in college) for students with a particular characteristic (such as those whose parents frequently discussed school-related matters with them) compared with a reference group (such as those whose parents had infrequent discussions). It should be noted that odds ratios are not the same as the ratio of percentages. For example, if the odds ratio of a student who participates in extracurricular activities is 2.0 for enrolling in college relative to students who participated in no extracurricular activities, the odds of the former group attending college are twice as high as the latter group. But they are not necessarily twice as likely to attend. While odds ratios and ratios of percentages are often similar, they may not be the same. In this report, reference to greater or lesser likelihood refers only to a change in odds.

Two achievement measures were controlled for in all the models: 1) the cumulative score from a NELS 8th-grade battery of tests in mathematics, reading, science, and social science administered to the NELS cohort in grade 8; and 2) the highest level of high school mathematics courses taken by at-risk students as reported on their high school transcripts. The test score is a continuous variable, while the mathematics variable is categorical with eight possible levels ranging from no math to calculus. For more detailed information about variables included in the models, see the glossary in appendix A.

Results

Many of the engagement variables measuring student involvement, parent involvement, parent expectations, and peer association had a significant effect on the enrollment outcome measures. These engagement variables, originally found to be important for reducing at-risk students' odds of dropping out of high school, were also important for increasing the odds of at-risk high school graduates advancing from high school graduation to postsecondary enrollment.

To begin the analysis, the effect of each engagement variable on the three outcome measures was determined separately after controlling for the six risk factors and two measures of students' achievement. The results for the individual variables are shown in table 6. Asterisks indicate statistical significance, meaning those behaviors or characteristics with one or two asterisks had a significant effect on the outcome measure.

To interpret the results, consider the first odds ratio with asterisks that appears in table 6, column 1. It is the odds ratio for participating in two or more extracurricular activities (2.09). This number means that among moderate- to high-risk students, the odds of enrolling in a 4-year college for students who participated in two or more extracurricular activities were 2.09 times higher than those who participated in no extracurricular activities. This was true even when controlling for the six risk factors and two student achievement measures. Students who participated in only one extracurricular activity, however, did not have significantly higher odds in enrolling in a 4-year college than their counterparts who participated in no activities (i.e., the result was not statistically significant). Similar results were found for the odds of enrolling in any postsecondary education versus not enrolling: two or more extracurricular activities increased the odds of enrolling in any postsecondary education by about 59 percent over not participating in any activities (odds ratio=1.59).

The other student engagement indicator (attendance patterns) did not have a significant effect on enrollment outcomes, but did have an effect on whether students exhibited strong persistence patterns once enrolled in postsecondary education. Those who reported either moderate or high secondary school attendance levels were more likely to show indications of strong persistence in postsecondary education than those who reported low levels of high school attendance. The odds ratios were 1.62 and 1.74, respectively.

Table 6

Logistic regression for the probability of moderate- to high risk students: 1) attending a 4-year college versus all others, 2) enrolling in any postsecondary education versus none, and 3) exhibiting strong postsecondary persistence indicators versus all others[1]

Predicted variable[2]	Odds ratio[3] 4-year college vs. other (N=2,878)	Some PSE vs. none (N=2,796)	Strong PSE persistence vs. others in PSE (N=1,667)
Student engagement with school			
Areas of extracurricular activities student participated in			
One	1.34	1.16	0.96
Two or more	2.09**	1.59**	1.14
None (comparison group)			
Student's school attendance			
Moderate attendance	1.29	0.98	1.62*
High attendance	1.53	0.94	1.74*
Low attendance (comparison group)			
Parent engagement with student's learning			
Parents' educational expectations for student			
Vocational/trade	0.78	1.69	2.93
Some college	1.60	2.99**	1.59
Bachelor's degree	2.37	3.04**	2.28
Advanced degree	2.08	3.19**	2.15
High school diploma/less (comparison group)			
Parents discussed school-related matter with student			
Some discussion	1.52	1.57**	1.13
Much discussion	2.17**	2.45**	1.25
Little to no discussion (comparison group)			
Friends' engagement with learning			
Importance of learning to student's friends			
Moderately important	1.44	1.42*	1.43
Highly important	1.71*	2.40**	1.63
Not very important (comparison group)			
Number of friends who planned to attend a 4-year college			
Few to some	1.96	1.59*	0.87
Most to all	6.01**	2.80**	1.38
None (comparison group)			
College preparation activities			
Amount of aid information used by student			
One	1.38	1.63**	0.94
Two or more	1.9**	1.98**	1.63*
None (comparison group)			
Number of people student talked to about aid			
One	1.78	1.91**	1.43
Two	2.00**	2.33	1.57
Three	2.04**	2.75**	1.54
None (comparison group)			

(table continues)

Table 6 (cont'd)

Predicted variable[2]	Odds ratio[3] 4-year college vs. other (N=2,878)	Some PSE vs. none (N=2,796)	Strong PSE persistence vs. others in PSE (N=1,667)
Participated in any HS outreach program			
Yes	2.88**	1.76	1.20
No (comparison group)			
Student got help preparing for entrance examination			
Yes	2.32**	1.73**	1.41*
No (comparison group)			
Student received help from school with college application process			
Yes	1.94**	1.66**	1.78**
No (comparison group)			

[1] Results in this table were estimated by the SUDAAN software, using the weight F3QWT92G.

[2] Each logistic regression controlled for six risk factors - socioeconomic status, number of times of changing school, GPA from grade 6 to 8, single parent family, ever held back, having one or more siblings who dripped out of school, and two achievement measures including the 8th-grade combined math, reading, science, and social studies test scores and level of mathematics courses taken over the four years of high school.

[3] *p< .05, **p< .01.

Source: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study (NELS: 88/94).

Indicators of parent involvement had some of the strongest effects on increasing the odds of enrolling in postsecondary education. Certainly as a predictor for enrolling in any type of postsecondary education, parents' educational expectations for their children greatly increased the odds of attending. Students whose parents had expectations of even "some college" had nearly three times greater odds of attending some form of postsecondary education (odds ratio=2.99) than those whose parents had expectations for no more than high school graduation. Unlike enrollment in any postsecondary education, however, parents' educational expectations did not have a significant effect on the odds of attending a 4-year college once the six risk factors and achievement levels were held constant.4 One explanation for this result might be that most high achieving students enroll in a 4-year college, and nearly all their parents expect them to attain at least a bachelor's degree. Therefore, there is little variation for levels of parental expectations relative to college enrollment. The results taken together may also mean that parents have a strong influence in getting their children into some form of postsecondary education, as evidenced by the significant effect for enrollment in any postsecondary education, but they have minimal influence on the level of postsecondary education in which their children enroll.

Students whose parents frequently discussed school-related matters with them had more than double the odds of enrolling in a 4-year college (odds ratio=2.17) than students whose parents had little to no discussion with them. Parent discussions—even some discussion-also had a strong effect on increasing the odds of a student attending any postsecondary education (odds ratios 1.57 and 2.45, respectively, for some and much discussion).

Students who reported that their peers were strongly involved in school also had higher odds of enrolling in a 4-year college, as well as attending any postsecondary education, compared to those whose peers were less involved. For example, students who reported that their friends considered learning activities highly important had about 70 percent higher odds of enrolling in a 4-year college (odds ratio=1.71) and almost two and a half times the odds of enrolling in any postsecondary education (odds ratio=2.4) than students whose friends considered such activities unimportant. Not surprisingly, students who reported that most or all of their friends intended to enroll in a 4-year college were highly likely do so themselves. In fact, friends' plans for college was the strongest predictor for 4-year college enrollment; students had six times higher odds of attending if most or all of their friends had similar plans (odds ratio=6.01). Likewise, compared with students with no friends planning to attend a 4-year college, if most or all of their friends had college plans, students had nearly three times higher odds of enrolling in any postsecondary education (odds ratio=2.8).

Finally, nearly all of the special college preparation activities increased the odds of moderate- to high-risk students attending a 4-year college, as well as attending any postsecondary education. Some were also important for increasing students' chances of exhibiting strong persistence indicators. For example, talking to at least two people about financial aid, getting help preparing for entrance exams, and getting help in the college application process were associated with strong persistence indicators. Participating in a high school outreach program, how ever, appeared to affect only 4-year college enrollment (odds ratio=2.88), but not enrollment in any postsecondary education, nor predicting strong persistence indicators.

In summary, once the six risk factors and two achievement measures were held constant, when the engagement variables were analyzed individually, most increased the odds of moderate to high-risk students enrolling in a 4-year college and in any postsecondary education. The results were especially strong and consistent for parent involvement measures and peer plans for college. Whether or not students exhibited strong indicators of postsecondary education persistence, on the other hand, was affected only by levels of high school attendance and some of the special college preparation activities.

The independent effect of engagement variables: hierarchical regression models

While most of the engagement measures, when analyzed separately, had beneficial effects on college or postsecondary education enrollment, it is also true that many may be interrelated. For example, students whose parents have high educational expectations for them are probably more engaged in school, which in turn increases their chances of postsecondary enrollment. In order to take such associations into account, we expanded the logistic regression models to control for all the engagement variables in addition to controlling for the six risk factors and student achievement. Moreover, we entered the sets of engagement variables hierarchically, beginning with parent engagement (step 1), then student engagement (step 2), then peer association (step 3). Finally, the full model also included the set of college preparation activities (step 4). This procedure allows for the examination of how the effects of one particular engagement variable changes as other engagement variables are introduced into the model. The results for the three outcome measures are presented in tables 7-9.

ODDS FOR ATTENDING A 4-YEAR COLLEGE VERSUS OTHERS

Table 7 displays the odds ratios for moderate- to high-risk students attending a 4-year college versus those who attended less-than-4-year institutions or who did not enroll in any postsecondary education, as predicted by the engagement variables and college preparation activities. As shown in the "step 4" column, even when all other engagement variables are held constant, the positive effect of parents having frequent school-related conversations with their teen remained an important factor for increasing the odds of enrolling in a 4-year college.

Likewise, having friends with college plans remained a very strong predictor for 4-year college enrollment. In fact, holding all other engagement variables and college preparation variables constant, compared with students who reported that none of their friends had plans for a 4year college, if most or all of their friends had college plans, the odds of moderate- to high-risk students attending were four times higher.5

College preparation activities also remained important in predicting 4-year college enrollment in the full model, especially if students participated in high school outreach programs. After all engagement variables were controlled for, students who reported participating in an outreach program had nearly twice the odds of enrolling in a 4-year college as those who did not. Similarly, getting help with college applications and preparing for entrance exams also remained important predictors of enrollment.

ODDS FOR ATTENDING AOME POSTSECONDARY EDUCATION VERSUS NONE

Table 8 displays the odds ratios for moderate- to high-risk students attending any form of postsecondary education versus those who never enrolled. The variables importance for predicting enrollment in any postsecondary education were slightly different from those for 4-year college enrollment. Controlling for all other engagement variables, both parent engagement variables—educational expectations and school-related discussions-were very strong predictors of enrollment. Likewise, both peer involvement variables had a significant effect on increasing the odds of enrolling in any postsecondary education. Among the college preparation activities, unlike 4-year college enrollment, obtaining financial aid information and talking to people about aid remained significant predictors of enrollment, but participating in high school outreach programs, preparing for entrance exams, and getting help with the application process did not.

Table 7

Four-step logistic regression for probability of moderate-to high-risk students attending a 4-year college versus all others predicted by parent engagement, student engagement, friends' engagement with learning, and college preparation activities (N=2,878)[1]

Predicted variable[2]	Odds ratio for at-risk students attending 4-year college vs. other[3] Step 1	Step 2	Step 3	Step 4
Total	45.1	25.7	4.4	24.8
Parent engagement with student's learning				
Parents discussed school-related matter with student				
Missing	0.93	0.93	0.87	0.89
Some discussion	1.51	1.41	1.36	1.31
Much discussion	2.16**	2.11**	1.97**	1.84*
Parents' educational expectations for student				
Missing	1.54	1.44	1.23	1.35
Vocational/trade	0.78	0.71	0.78	0.80
Some college	1.50	1.41	1.27	1.22
Bachelor's degree	2.30	2.12	1.82	1.70
Advanced degree	1.93	1.77	1.46	1.30
Student engagement with school				
Student's class attendance				
Missing		1.03	0.85	0.82
Moderate attendance		1.28	1.16	1.05
High attendance		1.49	1.38	1.25
Extracurricular activities student participated in				
Missing		1.68	1.52	1.26
One		1.22	1.04	1.07
Two		1.86**	1.51	1.40
Friends' engagement with learning				
Importance of learning to student's friends				
Missing			1.92	1.64
Moderately important			1.19	1.15
Highly important			1.19	1.15
Number of friends who planned to attend a 4-year college				
Missing			2.78	3.31**
Few to some			1.79	1.50
Most to all			4.91**	4.00**
College preparation activities				
Amount of aid information used by student				
Missing				0.71
One				1.01
Two or more				1.27
Number of people student talked to about aid				
Missing				0.78
One				1.45
Two				1.41
Three				1.36
Four or more				1.18
Participated in any HS outreach program				
Yes				1.97*

(table continues)

Table 7 (cont'd)

Predicted variable[2]	Odds ratio for at-risk students attending 4-year college vs. other[3] Step 1	Step 2	Step 3	Step 4
Student got help preparing for entrance exam				
Missing				0.68
Yes				1.82**
Student received help from school with college application process				
Missing				2.66
Yes				1.39*

[1] Results in this table were estimated by the SUDAN software, using the weight F3QWT92G. The _values for each respective step are: 710.25, 735.55, 823.03, and 896.56. All are significant at p< .01.

[2] Each logistic regression controlled for six risk factors-Socioeconomic status, number of times of changing school, GPA from grade 6 to 8, single parent family, ever held back, having one or more siblings who dropped out of school, and two achievement measures including the 8th grade combined math reading, science, and social studies test scores and level of mathematics courses taken over the four years of high school.

[3] *p<. 05, **p<.01.

Source: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study (NELS: 88/94).

Table 8

Four-step logistic regression for probability of at-risk students attending some postsecondary education versus none, predicted by student engagement, parent engagement, friends' engagement with learning, and college preparation activities (N=2,796)[1]

Predicted variable[2]	Odds ratio for at-risk students attending some PSE vs. none[3] Step 1	Step 2	Step 3	Step 4
Parent engagement with student's learning				
Parents discussed school-related matter with student				
Missing	1.15	1.15	1.08	1.09
Some discussion	1.59**	1.57**	1.47*	1.50*
Much discussion	2.31**	2.26**	2.10**	1.96**
Parents' educational expectations for student				
Missing	2.24**	2.22**	2.15*	2.24*
Vocational/trade	1.73**	1.74**	1.79	1.63
Some college	2.91**	2.90**	2.63**	2.25**
Bachelor's degree	3.01**	2.96**	2.66**	2.38**
Advanced degree	3.05**	2.93**	2.50*	2.16*
Student engagement with school				
Student's class attendance				
Missing		1.12	1.02	1.04
Moderate attendance		0.94	0.85	0.82
High attendance		0.87	0.78	0.80
Extracurricular activities student participated in				
Missing		1.00	0.83	0.73
One		1.02	0.99	0.95
Two		1.43	1.27	1.18
Friends' engagement with learning				
Importance of learning to student's friends				
Missing			1.56*	1.47
Moderately important			1.29	1.26
Highly important			1.95**	1.82**

(table continues)

Table 8 (cont'd)

Predicted variable[2]	Odds ratio for at-risk students attending some PSE vs. none[3] Step 1	Step 2	Step 3	Step 4
Number of friends who planned to attend a 4-year college				
Missing			1.82**	2.06**
Few to some			1.48	1.30
Most to all			2.27**	1.75*
College preparation activities				
Amount of aid information used by student				
Missing				0.81
One				1.05
Two or more				1.44*
Number of people student talked to about aid				
Missing				0.76
One				1.67*
Two				1.68*
Three				1.88*
Four or more				0.72
Participated in any HS outreach program				
Yes				1.40
Student go help preparing for entrance exam				
Missing				2.20
Yes				1.15
Student received help from school with college application process				
Missing				0.85
Yes				1.30

[1].Results in this table were estimated by the SUDAAN software, using the weight F3QWT92G. The X^2 values for each respective step are: 550.63, 561.36, 621.06, and 750.18. All are significant at p<.01.

[2] Each logistic regression controlled for six risk factors-socioeconomic status, number of times of changing school, GPA from grade 6 to 8, single parent family, ever held back, having one or more siblings who dropped out of school, and two achievement measures including the 8th-grade combined math, reading, science, and social studies test scores and level of mathematics courses taken over the four years of high school.

[3] *p<.05, **p<.01.

Source: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study (NELS: 88/94).

Table 9

Four-step logistic regression for moderate-to high-risk students exhibiting strong persistence indicators in postsecondary education, predicted by parent engagement, student engagement, friends' engagement with learning, and college preparation activities (N=1,667)[1]

Predicted variable[2]	Odds ratio for full participation in PSE [3] Step 1	Step 2	Step3	Step 4
Parent engagement with student's learning				
Parents discussed school-related matter with student				
Missing	0.97	0.96	0.94	1.00
Some discussion	1.12	1.07	1.05	1.06
Much discussion	1.24	1.22	1.20	1.20
Parents' educational expectations for student				
Missing	1.21	1.23	1.34	1.45
Vocational/trade	2.96*	2.84*	3.07	3.02

(table continues)

Table 9 (cont'd)

Predicted variable[2]	Odds ratio for full participation in PSE [3] Step 1	Step 2	Step3	Step 4
Parents' educational expectations for student (cont'd)				
Some college	1.59	1.60	1.71	1.64
Bachelor's degree	2.29	2.22	2.32	2.15
Advanced degree	2.12	2.06	2.04	1.90
Student engagement with school				
Student's class attendance				
Missing		1.60	1.50	1.55
Moderate attendance		1.59*	1.54	1.49
High attendance		1.69*	1.63	1.53
Extracurricular activities student participated in				
Missing		0.79	0.71	0.72
One		0.92	0.86	0.89
Two		1.06	0.97	0.95
Friends' engagement with learning				
Importance of learning to student's friends				
Missing			1.43	1.35
Moderately important			1.38	1.42
Highly important			1.49	1.52
Number of friends who planned to attend a 4-year college				
Missing			0.73	0.96
Few to some			0.79	0.73
Most to all			1.18	1.05
College preparation activities				
Amount of aid information used by student				
Missing				2.03
One				0.75
Two or more				1.28
Number of people student talked to about aid				
Missing				0.84
One				1.34
Two				1.35
Three				1.17
Four or more				0.98
Participated in any HS outreach program				
Yes				1.01
Student got help preparing for entrance exam				
Missing				0.84
Yes				1.24
Student received help from school with college application process				
Missing				0.45
Yes				1.51*

1 Results in this table were estimated by the SUDAAN software, using the weight F3QWT92G. The x2 values for each respective step are: 238.04, 252.69, 272.69, and 316.09. All are significant at p<.01.

2 Each logistic regression controlled for six risk factors-socioeconomic status, number of times of changing school, GPA from grade 6 to 8, single parent family, ever held back, having one or more siblings who dropped out of school, and two achievement measures including the 8th-grade combined math, reading, science, and social studies test scores and level of mathematics courses taken over the four years of high school.

3 *p<p.05,**p<.01.

Source: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study (NELS: 88/94).

ODDS FOR STRONG POSTSECONDARY EDUCATION PERSISTENCE INDICATORS

Table 9 displays the results for whether or not students exhibited strong persistence indicators once they enrolled in postsecondary education. It is clear that once all the student, parent, and peer engagement variables were introduced in the model, none had a net independent effect on persistence indicators. Only the college preparation activity of obtaining help with the application process had an independent effect on increasing the odds of strong persistence. Thus, it appears that although the student, parent, and peer engagement variables examined in this analysis were important for predicting postsecondary and college enrollment, they had minimal effect on increasing the odds of strong persistence in postsecondary education among moderate- to high-risk students.

Summary and conclusions

The purpose of this study was to determine whether student, parent, and peer engagement factors that contributed to at-risk students' success in graduating from high school continued to be important in making the transition from high school to postsecondary education. The answer in large part, is yes for the parent and peer engagement variables, but less conclusive for the student engagement variables. The effect of the engagement variables also differed depending on the outcome.

Confirming the importance of parent involvement, both parent engagement measures in this analysis-the frequency of school-related discussions and parents' expectations for their teen's educational attainment-substantially increased the odds of moderate- to high-risk students enrolling in some form of postsecondary education. This effect persisted even after controlling for student achievement and taking into account peer and student engagement, as well as college preparation activities. Students' odds of enrolling were increased about two-fold even among those whose parents reported having only "some school-related discussions" (versus none) and among those whose parents reported relatively modest educational expectations for their child (e.g., "some college" short of a bachelor's degree).

The two measures of parent involvement had less of an impact on increasing the odds of enrolling in a 4-year college. Only students whose parents reported frequently discussing school related matters with their teen exhibited significantly higher odds of enrolling, compared with students who had no such discussions. And unlike enrollment in any postsecondary education, parents' educational expectations did not appear to significantly increase the odds of moderate to high-risk students enrolling in a 4-year college.6 Interpreting the results from both outcomes, the findings suggest that parents play a very influential role in getting their moderate- to high-risk teens to enroll in postsecondary education, but have less influence on whether they enroll in a 4year college or sub-baccalaureate institution.

Consistent with the considerable research demonstrating peer group effects on educational outcomes (for a review see Hanushek, 1986), there was also evidence of this phenomenon in this study. In fact, the variable that most increased the odds of enrolling in a 4-year college was the number of friends with college plans. Compared to students who reported having no friends with college plans, the odds of enrolling were four times higher for those reporting that most or all of their high school friends planned to enroll in a 4-year college. Having friends with college plans also doubled the odds of students enrolling in any postsecondary education over not enrolling at all. The latter result may indicate that moderate- to high-risk students who are not yet prepared to enroll in a 4-year college, may be more likely than not to enroll some form of postsecondary education when most of their friends have college plans.

The importance that friends attributed to learning activities such as studying and getting good grades also increased the odds of enrolling in some form of postsecondary education, but did not significantly affect the odds of enrolling in a 4-year college. Thus, like the result for the parent involvement measures, associating with friends who are highly involved in learning activities is important for enrolling in some form of postsecondary education, but is less predictive of the level at which students enroll.

Unlike the strong effects of parent and peer engagement measures, net of the other engagement variables, the student engagement measures (level of secondary school attendance and extracurricular activities) had minimal effect on the enrollment outcomes. One explanation for the lack of effect for student attendance levels may have to do with the correlation between attendance behavior and achievement. Higher achieving students are more likely to report higher levels of attendance. Thus, once achievement is controlled for, there is little variation for attendance.

With respect to extracurricular activities, students who participated in two or more activities did have higher odds of enrolling in a 4-year college prior to introducing the peer engagement variables into the model (see table 7). Once the peer engagement variables were introduced, the effect of extracurricular activities involvement was no longer significant. Since participation in extracurricular activities is required or at the very least, encouraged by many 4-year colleges, the number of friends with college plans would be correlated with the likelihood of participating in extracurricular activities. Therefore, it is not particularly surprising to see that once this peer variable is introduced into the model, the effect of extracurricular activity involvement is minimized.

Unlike the effects on postsecondary enrollment, none of the engagement variables had a net effect on students' postsecondary persistence once enrolled. That is, for moderate- to high-risk students who enrolled in postsecondary education, none of the student, parent, or peer engagement variables included in the full model increased their odds of enrolling immediately after high school graduation and attending full-time continuously from the time of enrollment. However, the indicator of persistence is based on a 2-year time period and is therefore limited in what it measures. It may also be the case that the factors contributing to persistence in higher education are those associated with students' college experiences rather than measures of high school engagement.

This study also demonstrated that, net of student, parent, and peer involvement measures, receiving assistance from teachers or other school staff in the college application process increased the odds of enrollment. For example, students who reported getting help in filling out their college application or preparing for entrance exams had higher odds of enrolling in a 4-year college than students who reported receiving no assistance. These activities tend to be more specific for enrolling in a 4-year college and therefore, only affected this outcome. On the other hand, when students reported obtaining financial aid information from two or more resources, or talked to one or more persons about financial aid, the odds of their enrolling in some postsecondary education also went up. With these data, however, it is not really possible to determine whether receiving assistance in the application process increased moderate- to high-risk students' chances of enrolling or whether those who made the decision to enroll sought out help in the process. Nevertheless, it is still worth noting the positive effect since this type of intervention on the part of the school is not particularly costly nor difficult to implement. School assistance is particularly important for at-risk students whose parents have no more than a high school education. When it comes to navigating their way through the application process, these students have less family guidance and experience to rely on relative to their peers with college-educated parents.

Finally, it should be noted that moderate- to high-risk students who participated in high school outreach programs had almost double the odds of enrolling in a 4-year college than their peers who did not participate. Even though relatively few at-risk students reported such participation (about 5 percent), the effect on college enrollment was significant. This finding confirms similar results reported for the High School and Beyond sophomore cohort of 1980 10th-graders (Adelman 1997). It is also consistent with the positive effect of receiving assistance in the college application process. In the end, this study showed that intervention, whether on the part of the parents or the school, played a positive role in helping moderate- to high-risk students make the transition from high school to college.

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Appendix A—Glossary

This glossary describes the variables used in this report. The items were taken from the National Education Longitudinal Study (NELS:88/94). The variables used in this analysis were either items taken directly from the NELS surveys or they were derived by combining one or more items in these surveys. Variable names beginning with "BY" were collected in the base year (1988), "F1" variables were collected in the first follow-up (1990), F2 in the second follow-up (1992), and F3 in the third (1994).

The variables listed in the index below are in the order they appear in the report; the glossary is in alphabetical order by variable name (displayed along the right-hand column).

GLOSSARY INDEX

Risk factors	
Number of risk factors	BYRISK2
Lowest socioeconomic quartile	BYSES
Single parent family	BYFCOMP
Older siblings dropped out of high school	F1S94
Changed schools two or more times from 1st to 8th grade	BYP40
Average grades C's or lower from 6th to 8th grade	BYGRD68
Held back one or more grades by 1988	BYS74
Student characteristics	
Race-ethnicity	173RACE
Parents' highest education level	F2PARED
Student engagement with school	
Students' class attendance	F1ATTEND
Students' extracurricular activities	F1EXCUR
Parent engagement with student's learning	
Parents' educational expectations	F1PAREXP
Parents discuss school-related matters with child	F2PTALK
Friend's engagement with learning	
Friends think learning is important	F1FRSTUD
Number of friends who plan to attend a 4-year college	F2FRCOLL
College preparation activities	
Amount of aid information used by student	AIDINFOI
Number of people student talked to about aid	AIDTALKI
Participated in any high school outreach program	OUTREACH
Entrance exam preparation	F2S45
Received help with postsecondary application process	F2S57
Postsecondary education outcomes	
Enrolled in a 4-year college	COLL4YR
Type of first institution	ANYPSE
Indicator of postsecondary persistence	PSEINDEX
Student achievement controls	
Highest level math courses completed	MTHQUAL8
8th-grade achievement	PREACH

Amount of aid information used by student *AIDINF01*

This variable is a composite of several items asking students whether they had ever read any information from the U.S. Department of Education or postsecondary institutions to learn more about obtaining financial aid (Yes/No).

Number of people student talked to about aid *AIDTALK1*

A composite of several items asking students about individuals they talked to in order to learn more about financial aid. The composite represents the number of people students talked with about financial aid.

Type of first institution *ANYPSE*

This variable indicates the type of postsecondary institution first attended by the student. If student did not attend any postsecondary education, the value is zero.

Single parent family *BYFCOMP*

Describes the family or household composition. It was constructed from the student responses to items BYS8A-I, taken from the 1988 survey. For this analysis the responses were aggregated as follows:

Single parent family	Household is composed of mother only or father only.
Not from a single parent family	Household is composed of mother and father, mother and male guardian, father and female guardian or other combination of relatives/guardians.

Average grades Cs or lower from 6th to 8th grade *BYGRD68*

Constructed from deciles of grade point averages categorized according to letter grades. For this analysis, the variable was aggregated as follows:

C's or lower grades	Student had average grades of C's or lower from 6th through 8th grade.
Higher than C grades	Student had higher than a C average from 6th through 8th grade.

Changed schools two or more times from 1st to 8th grade *BYP40*

In the 1988 survey, parents were asked how many times their 8th-grader had changed schools since he or she entered 1st grade. Changes that occurred as a result of promotion to one grade or level or a move from one elementary school to a middle school in the same district were not counted. This analysis aggregated the number of school changes as follows:

Two or more school changes	Student changed schools two or more times between 1st and 8th grades.
No more than one school change	Student changed schools between 1st and 8th grades no more than one time.

Number of risk factors *BYRISK2*

The sum of six possible risk factors that increase students' odds of dropping out of high school including:

1. Lowest SES quartile (BYSES)
2. Single parent family (BYFCOMP)
3. Older sibling dropped out of high school (FIS94)
4. Changed schools two or more times (reported by the parent) (BYP40)
5. Average grades of C's or lower from 6th to 8th grades (BYGRD68)
6. Repeated an earlier grade (BYS74)

All of the risk factors were identified as of the 8th grade with the exception of students having older siblings who dropped out of high school, which was asked in the 10th grade. If a student had missing data for two or more risk items, the variable was set to missing. Students with two or more risk factors were considered at moderate- to high risk and were included in this analysis.

Held back one or more grades by 1988 *BYS74*

A direct question asked of the 1988 8th-grader: Were you ever held back (made to repeat) a grade in school?

Held back	Student was held back a grade in school.
Not held back	Student was never held back a grade in school.

Lowest socioeconomic quartile *BYSES*

A composite measure of socioeconomic status constructed using the following parent questionnaire data:

Father's education level
Mother's education level
Father's occupation
Mother's occupation
Family income

For cases where all parent data components were missing (8.1 percent of the participants), student data were used to compute the socioeconomic status percentile. The variable was aggregated to quartiles for this analysis.

Lowest quartile	Socioeconomic status fell at or below the lowest 25th percentile.
Middle quartiles	Socioeconomic status fell between the 25th percentile and the 75th percentile.
Highest quartile	Socioeconomic status fell at or above the 75th percentile.

Enrolled in a 4-year college — *COLL4YR*

This variable is based on the type of first postsecondary institution (F3SEC2Al) attended by the student, and indicates whether or not a student first enrolled in a 4-year college. In about 5 percent of cases, F3SEC2A I was missing, and for these students, their enrollment status as of October 1992 was used (ENST1092).

4-year college	Student's first postsecondary institution was a 4year college.
Not a 4-year college	Student's first postsecondary institution was not a 4 year college.

Students' class attendance — *F1ATTEND*

A measure of students' school attendance, asked in 1990. The variable is based on a factor analysis with a standardized factor score (mean=O and standard deviation=l) on the following items asked of the student:

How many times they were late for school	(FISIOA)
How many times they skipped school	(FISIOB)
How many days they were absent	(F IS 13)

The index was aggregated quartiles as follows:

Low attendance	Student's attendance value fell below the 25th percentile.
Moderate attendance	Student's attendance value fell between the 25th and 75th percentiles.
High attendance	Student's attendance value fell above the 75th percentile.

Students' extracurricular activities — *F1EXCUR*

Number of extracurricular activities in a variety of areas reported by the student in 1990. Includes sports, band, theater, student government, academic societies, yearbook, service clubs, and hobby clubs. The variable was aggregated as follows:

None	Student did not participate in any extracurricular activities.
One	Student participated in one extracurricular activity.
Two or more	Student participated in two or more extracurricular activities.

Friends think learning is important — *F1FRSTUD*

A composite measure of students' peer engagement with respect to the importance of learning activities. Based on a factor analysis with a standardized factor score (mean=O and standard deviation=l) of the following variables where students indicated how important (not important, somewhat important, very important) friends thought it was to:

Attend classes	(FIS70A)
Study	(FlS70B)
Get good grades	(FIS70D)
Finish high school	(FIS70F)
Continue education past high school	(FIS70I)
Not very important	Students' friends' index of importance for learning fell below the 25th percentile.
Moderately important	Students' friends' index of importance for learning fell between the 25th and 75th percentile.
Highly important	Students' friends' index of importance for learning fell above the 75th percentile.

Parents' educational expectations — *F1PAREXP*

Variable was based on the highest educational expectations reported by either the student's father or mother in 1990. For this analysis, the variable was aggregated as follows:

High school diploma or less	Parents expected student to attain a high school diploma or less.
Some college	Parents expected student to attend some postsecondary education, but short of a bachelor's degree.
Bachelor's degree or higher	Parents expected student to attain a bachelor's or higher.

Older siblings dropped out of high school — *RS94*

In the 1990 survey, students were asked how many brothers or sisters (including adopted, step-, or half-siblings) left high school before graduating. For this analysis, the variable was aggregated to:

One or more siblings dropped out	One or more siblings had dropped out of high school.
No siblings dropped out	None of student's siblings were in high school, student was an only child or the oldest, none of student's siblings had dropped out of high school.

Number of friends who plan to attend a 4-year college F2FRCOLL

Based on an item: "How many of your friends plan to attend a 4-year college?" asked on the 1992 survey.

None	None of student's friends planned to attend 4-year college.
Few to some	Few to some friends planned to attend 4-year college.
Most to all	Most or all of student's friends planned to attend 4-year college.

Parents' highest education level F2PARED

This composite variable characterizes the level of education attained by the student's parent with the highest reported education level. It was constructed using the second follow-up parent questionnaire data. New student supplement data were used if parent data were missing. For this analysis, the variable was aggregated as follows:

High school or less	Neither parent completed high school, or at least one parent completed high school or GED.
Some postsecondary education	At least one parent attended some postsecondary education or college, but neither attained a bachelor's degree.
Bachelor's degree or higher	At least one parent was a college graduate, or had attained an advanced degree.

Entrance exam preparation F2S45

A composite measure based on a positive student response to the following concerning their preparation activities for taking entrance exams (asked in 1992) (Yes/No):

Took a special course at student's high school	(F2S45A)
Took a course offered by a commercial test preparation service	(F2S45B)
Received private one-on-one tutoring	(F2S45Q
Studied from test preparation books	(172S4513)
Used a test preparation video tape	(F2S45E)
Used a test preparation computer program	(F2S45F)

Received help with postsecondary application process F2S57

A composite measure based on a positive student response to several items asked in 1992 concerning whether or not students received help from their high school in the following areas (Yes/No):

Help with filling out vocational/technical school or college applications?	(F2S57A)
Help with filling out financial aid forms?	(F2S57B)
Assistance in writing essays for vocational/technical school or college applications?	(F2S57Q
Days off from school to visit vocational/technical schools or colleges?	(172S5713)

Parents discuss school-related matters with child F2PTALK

A composite measure of parent engagement determining how frequently parents discussed school matters with their child. It is based on a factor analysis with a standardized factor score (mean=0 and standard deviation=1) of the following variables: How frequently during the past two years have you and/or your spouse/partner talked about the following with your teenager?

Selecting courses or programs at school	(F2P49A)
School activities or events of particular interest to your teenager	(F2P49B)
Things your teenager has studied in class	(F2P49C)
Your teen's grades	(F2P49D)
Plans and preparation for the American College Testing test (ACT), Scholastic Aptitude Test (SAT), or Armed Services Vocational Aptitude Battery (ASVAB)	(F2P49E)
Applying to colleges or other schools after high school	(F2P49F)

The index was coded into quartiles as follows:

Little to no discussion	Parents' index for level of discussion fell below the 25th percentile.
Some discussion	Parents' index for level of discussion fell between the 25th and 75th percentile.
Much discussion	Parents' index for level of discussion fell above the 75th percentile.

Race-ethnicity F3RACE

Based on the 1992 identification unless it was missing or incorrect. In addition, if it became apparent from responses to other questions that the preloaded 1992 value was incorrect, the value was corrected in 1994. Sample members

with the value of "Other" were assigned as missing.

Asian/Pacific Islander	A person having origins in any of the Pacific Islander peoples of the Far East, Southeast Asia, the Indian subcontinent, or Pacific Islands. This includes people from China, Japan, Korea, the Philippine Islands, Samoa, India, and Vietnam.
Hispanic	A person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race,
Black, non-Hispanic	A person having origins in any of the black racial groups of Africa, not of Hispanic origin.
White, non-Hispanic	A person having origins in any of the original peoples of Europe, North Africa, or the Middle East (except those of Hispanic origin).
American Indian/Alaskan Native	A person having origins in any of the original peoples of North America and who maintains cultural identification through tribal affiliation or community recognition.

Highest level math courses completed *MTHQUAL8*

This variable describes the highest sequence of math courses student completed in high school. It is based on high school transcripts.

No math	Student did not take any math courses.
Non-academic	Student took non-academic courses which include those classified as "general mathematics" or "basic skills mathematics."
Low academic	Student took low academic courses which comprise the preliminary (e.g., pre-algebra) or reduced rigor/pace mathematics courses (algebra I that is spread over two academic years, and "informal geometry"), but that are classified as more rigorous than the non-academic courses.
Completed algebra I and geometry	Completed two years of mathematics including algebra I and geometry, or two years of unified mathematics.
Completed algebra 11	An additional year of mathematics was completed including algebra II or a third year of a unified mathematics program.
Completed "advanced courses"	An additional year of mathematics was completed in any course labeled as "advanced," including various trigonometry, probability, and statistics courses.
Completed introductory analysis	An additional year of mathematics was completed including introductory analysis or precalculus.
Completed calculus	An additional year of mathematics was completed including any calculus course.

Participated in any high school outreach program *OUTREACH*

Based on the series of questions asking students about their year-to-year participation in any special outreach programs, such as Upward Bound or Talent Search. If they answered yes to participating in any year for any special program they were coded yes.

8th-grade achievement *PREACH*

Composite test score based on the mean of 1988 math, science, reading, and social studies test scores.

Indicator of postsecondary persistence *PSEINDX*

For students who enrolled in postsecondary education, this variable indicates whether or not they enrolled full time within one year after high school graduation and attended continuously from first enrollment (other than summer months).

Strong persistence indicators	Student enrolled full time within one year of high school graduation and attended continuously.
Other	Student delayed enrollment, started part time, or had non continuous enrollment.

Appendix B—technical notes and methodology

The National Education Longitudinal Study of 1988

The National Education Longitudinal Study of 1988 (NELS:88) is a survey that began with a nationally representative sample of 1988 8th-graders and surveyed them every two years. The most recent follow-up survey occurred in

1994. Respondents' teachers and schools were also surveyed in 1988, 1990, and 1992, while parents were surveyed in 1988 and 1992. In contrast to previous longitudinal studies, NELS:88 began with 8th-graders in order to collect data regarding the transition from elementary to secondary education. The first follow-up in 1990 provided the data necessary to understand the transition. Dropouts were administered a special survey to understand the dropout process more thoroughly. For the purpose of providing a comparison group to 1980 sophomores surveyed in one High School and Beyond Institutional Study (HS&B), the NELS:88 sample was also "freshened" with new participants who were 10th-graders in 1990.

In spring of 1992, when most of the NELS:88 samples were 12th-graders, the second follow-up took place. This survey focused on the transition from high school to both the labor force and postsecondary education. The sample was also "freshened" in order to create a representative sample of 1992 seniors for the purpose of conducting trend analyses with the 1972 and 1982 senior classes (NLS-72 and HS&B). Students identified as dropouts in the first follow-up were also resurveyed in 1992. In spring of 1994, the third follow-up was administered. It was this follow-up that provided information about postsecondary enrollment experiences used in this report. Sample members were also questioned about their labor force participation and family formation. For more information about the NELS:88 survey, consult the NELS:88/94 Methodology Report.[7]

Sample used in the analysis

Because this analysis was concerned with "resilient" students at risk-high school graduates who, in the 8th grade, were at risk of dropping out but who did not drop out the NELS 1992 high school graduate cohort was used as the base sample (i.e., F3QWT92G weight variable was used). In addition, only students considered at moderate to high risk of dropping out of high school were included in the analysis (see description of risk variables under the BYRISK2 entry in appendix A). Moderate to high risk was defined as having two or more of six possible risk factors. Among this sample, students also had to have values for the three outcomes analyzed (for description of outcome variables, see "Statistical Procedures" below).

Statistical procedures

There were three outcome variables analyzed in the study. Two describe at-risk students' postsecondary education enrollment status within two years after high school graduation: 1) attended a 4-year college versus all others (including a non-4-year college or no college at all); and 2) attended any postsecondary education versus those who never attended. The third outcome was a measure of postsecondary persistence and classified students with (and without) indicators of strong postsecondary persistence among those who enrolled. Because all three outcomes are dichotomous variables (0=No and 1=Yes), a logistic regression model was used to perform multivariate analyses. In order to take into account the complex nature of the NELS survey design, SUDAAN software application was used. SUDAAN uses a Taylor series approximation technique to estimate standard errors for the logistic regression estimates, a method that takes into account the stratified sample design of the survey. For a detailed description of SUDAAN, please refer to SUDAAN Users Manual.8 The syntax of the SUDAAN program is illustrated by the following example, which produced the output for step 4 in Table 7:

```
PROC LOGISTIC DATA="c:\\logcoll" FILETYPE=sas DESIGN=WR;
NEST strata psu;
WEIGHT f3qwt92g;
SUBGROUP  f2ptalk f1parexp f1attend f1excur f1frstud f2frcoll aidinfo1
          aidtalk1 outreach f2helpex f2helpap SINGLE HELDBACK sibdrop
          mthqual8;
LEVELS 4 6 4 4 4 4 4 6 2 3 3 2 2 2 9;
MODEL coll4yr =  f2ptalk f1parexp f1attend f1excur f1frstud f2frcoll
                 aidinfo1 aidtalk1 outreach f2helpex f2helpap single
                 heldback sibdrop byses byp40 bygrd68 preach mthqual8;
SETENV COLWIDTH=11 DECWIDTH=2 COLSPCE=2 LINESIZE=78;
PRINT BETA SEBETA T_BETA P_BETA;
PRINT / RISK=all;
PRINT / TESTS=default;
TITLE "Attended a 4-year college or not".
```

In this program, the first command is procedure statement that indicates a logistic regression procedure. "LOGCOLLI:' is the SAS system file that stores the data for the study. Design statement is "with replacement." "STRATA" and "PSU" are stratum and psu variables derived from the student ID in NELS:88. The subcommands of "SUBGROUP" and "LEVELS" indicate the levels of all categorical variables included in the model. For variables with 10 percent or more missing cases, a "missing" category was included in the analysis. The subcommand of "MODEL" specifies the logistic regression model with the dichotomous outcome variable of "COLL4YR" (enrolled in a 4-year college) and all independent variables that we were interested in examining.

Notes

[1] In Chen and Kaufman's study, a sixth factor, having limited English proficiency, was also identified. However, after controlling for all other risk factors, limited English proficiency was a weak predictor of dropping out. In addition, the students identified in the NELS:88 survey who were of limited English proficiency were those who were proficient enough to complete the questionnaire and were thus not necessarily representative of all limited English proficiency 8th-graders in 1988. Thus, the language proficiency was not considered a risk factor for this analysis.

[2] The at-risk population identified in this study differs slightly from Chen and Kaufman's study for two of the risk factors, lower than average grades and changing schools. The current study characterized students according to their risk status in the 8th grade (with the exception of having dropout siblings which was asked in the first follow-up survey). Therefore, having grades of C's or lower was determined from 6th to 8th grades and changing schools was determined from 1st through 8th grades. Chen and Kaufman's study, on the other hand, included high school grades and changing secondary schools.

[3] Students who changed schools two or more times did not markedly differ from those who did not change schools no more than one time with regard to the proportion of those who did not enroll in any postsecondary education (26 percent and 22 percent).

[4] While the odds ratios for parents expecting a bachelor's degree (2.37) or an advanced degree (2.08) appear high, they are not statistically significant ($p<.05$).

[5] The significant effect for students who had missing data for peer involvement probably indicates that these students likely had many peers with college plans but there was no way of determining this.

[6] This result may be due in part to the fact that parents expectations for their children are generally high, especially for those who are academically prepared to enroll them in college (Horn 1997). Therefore, once students' achievement level is controlled for, there is little variation in parents' expectations.

[7] U.S. Department of Education, National Center for Education Statistics, *National Education Longitudinal Study (NELS:88/94) Methodology Report*, NCES 96–174 (Washington, D.C.: 1996).

[8] B. Shah, B. Barnwell, P. Hunt, and L. LaVange, SUDAAN Users Manual (North Carolina: Research Triangle Institute: 1995).

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7

Effects of early educational awareness

Programs at Higher Education Institutions for Disadvantaged Precollege Students

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Highlights

The *Survey on Precollegiate Programs for Disadvantaged Students at Higher Education Institutions* was requested by the Planning and Evaluation Service of the Office of the Under Secretary within the U.S. Department of Education. This survey was intended to obtain information about programs at higher education institutions that are designed to increase the access of educationally or economically disadvantaged elementary and secondary students to higher education. Only the largest such program (based on funding) at each institution was included in the survey. Data were collected from 2-year and 4-year higher education institutions in fall 1994 and were weighted to provide national estimates.

- Roughly one-third (32 percent) of all institutions offered at least one program for precollegiate students in 1993–94 (table 1). Programs were especially common at large institutions (71 percent) and public institutions (45 percent).
- At 47 percent of the institutions with programs, the largest precollegiate program accounted for all of the precollegiate students served by the institution (figure 1).
- The largest precollegiate programs served 317,400 students in 1993–94 and involved 9,600 faculty and staff (table 3). If all precollegiate programs for the disadvantaged are included, the enrollment was at least 525,100, with about 90,000 expected to graduate from high school in the next year. Of the students in the largest programs, 68 percent were from low-income families, 59 percent were female, 39 percent were black, and 29 percent were Hispanic (tables 11 and 12).
- The goals that institutions most often listed among the top three for their largest program were increasing the likelihood of the students attending college (78 percent), increasing general academic skills development (67 percent), and increasing retention in or completion of high school (64 percent; figure 2).
- Almost two-thirds (64 percent) of the precollegiate program participants in 1993–94 were high school students; the next largest group was middle or junior high school students (25 percent; table 14). For slightly under half of the programs (44 percent), students usually entered the program in the freshman or sophomore year of senior high school (figure 5). On average, students participated for 2.9 years (table 9).
- Half (51 percent) of the institutions reported that the federal government was the primary source of funding for the program, while state and/or local government funding was the next most common primary source (20 percent; table 4).
- Most students (58 percent) were in full-year programs, which were much more intensive than the part-year programs (table 8). In full-year programs, students spent a mean of 323 hours in program activities, compared with 166 hours in programs operating only during the summer and 86 hours in programs operating during the academic year (figure 3). Within the full-year programs, most of students' time was spent during the summer (206 hours versus 117 during the academic year).
- The precollegiate services that were most often considered among the three most important by the institutions were social skills development (43 percent), information about college admissions and/or financial aid (35 percent), supplemental courses (33 percent), and career counseling (32 percent; table 16).
- Most of the programs (63 percent) provided some type of financial award, with 50 percent paying a stipend for participation and 33 percent offering financial benefits (such as scholarships and college courses for free or at reduced prices) for successful performance (table 17).

...onal Center For Education Statistics Statistical Analysis Report, U.S. Department of Education, pp. iii–v, 7–11, 13–25 December 1995

- One focus of this survey was on comparing Upward Bound precollegiate programs with other precollegiate programs at higher education institutions. Upward Bound is the oldest and largest (in terms of funding) of six Special Programs for Disadvantaged Students (TRIO) programs administered by the U.S. Department of Education to help disadvantaged students to complete postsecondary education. It is directed at 13- to 19-years-old high schools student, and generally provides an intensive 6-week summer program at a college campus along with continued support during the school year.

Upward Bound programs had significant differences from other precollegiate programs for the disadvantaged.

- They were more likely to rank the following services as being among their three most important: accelerated courses below the college level (35 percent versus 10 percent), other supplemental courses (44 percent versus 28 percent), and information about admissions and/or financial aid (56 percent versus 27 percent; table 16).
- They were also more likely to have their students usually start in the freshman or sophomore years (97 percent versus 20 percent; table 13).
- As might be expected for a federally funded program, they more frequently said that federal funding was their primary source of funding (97 percent versus 30 percent; table 4).

Table 1

Percent of institutions that had precollegiate programs for disadvantaged students, and the percent of institutions with precollegiate programs where the largest program is Upward Bound, by institutional characteristics: 1994

Institutional characteristic	Have precollegiate programs for disadvantaged students	Largest precollegiate program is Upward Bound*
All institutions	32	31
Control		
Public	45	33
Private	22	26
Level		
2-year	28	21
4-year	35	35
Region		
Northeast	33	13
Southeast	37	41
Central	31	40
West	28	29
Size of institution		
Less than 3,000	21	27
3,000 to 9,9999	48	29
10,000 or more	71	40

* Percents in this column are based on those institutions that have precollegiate programs for disadvantaged students.

Note: Data are for higher education institutions in the 50 states, the District of Columbia, and Puerto Rico.

Source: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System, Survey on Precollegiate Programs for Disadvantaged Students at Higher Education Institutions, 1994.

Frequency of precollegiate programs

Approximately one-third (32 percent) of higher education institutions reported having precollegiate programs designed to increase the access of disadvantaged students to college (table 1). Precollegiate programs were more common in large institutions (71 percent) than in small institutions (21 percent), in public institutions (45 percent) than in private institutions (22 percent), and in 4-year institutions (35 percent) than in 2-year institutions (28 percent).

Thirty-one percent of the largest precollegiate programs (based on funding) were Upward Bound.[13] However, the focus of this study on the largest precollegiate program sometimes resulted in the exclusion of Upward Bound programs.[14] Thus, while this study will often describe Upward Bound programs as forming a relatively distinctive group among all of the largest precollegiate programs, it was not the purpose of this study to provide a general

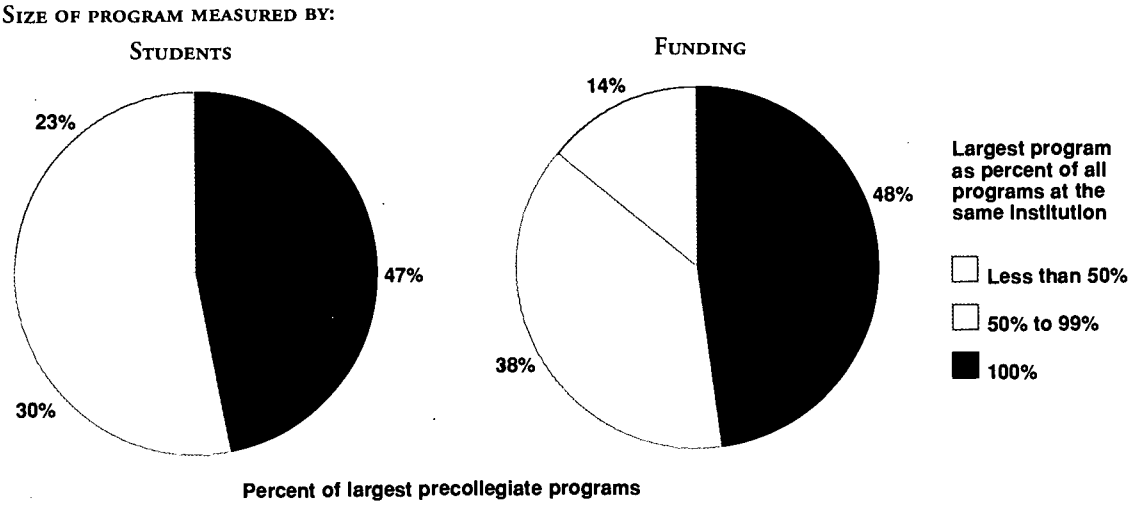
description of all Upward Bound programs. Rather, the statistics presented here should be interpreted only as applying to those Upward Bound programs that were the largest precollegiate program at their institutions.[15]

Upward Bound programs were more likely to be found at some institutions than at others. They composed 35 percent of the largest precollegiate programs at 4-year institutions but only 21 percent at 2-year institutions, and about 40 percent at institutions in the Southeast and Central regions versus 13 percent in the Northeast.

Institutions were asked to describe what percentage of all funding for precollegiate programs was received by the largest program in terms of funding, and what percentage of all precollegiate students were in the largest program. However, institutional representatives indicated that they could not provide reliable estimates in response to these questions, so their responses were recoded to only reflect very simple judgments by the institution: whether the program was the only precollegiate program at the institution (i.e., it had all of the students and funding), it had at least half of the students and/or funding, or it had less than half (figure 1).

Figure 1

Largest precollegiate program as a percent of all precollegiate programs at the same institution: 1994



Source: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System, Survey on Precollegiate Programs for Disadvantaged Students at Higher Education Institutions, 1994.

By these measures, the largest precollegiate programs accounted for a substantial portion of all precollegiate programs. For approximately half (47 to 48 percent) of the institutions with precollegiate programs, the largest program was the only program. For another 38 percent, the largest program accounted for at least half of the funding, while for 30 percent they accounted for at least half of the students. Even at the largest institutions, which were the most likely to have multiple precollegiate programs, the largest program accounted for all students or funding at 34 percent of the institutions, and for at least half of the students or funding at another 34 to 41 percent (table 2). The largest program was likely to be the only precollegiate program to receive funding at private institutions (59 percent) and at small institutions (61 percent). Thus, though this study is limited to the largest precollegiate programs, often either no precollegiate program for the disadvantaged was excluded (simply because the responding institution had only one such program) or the excluded programs accounted for only a small portion of the funding or students. In short, this survey provided relatively broad coverage of precollegiate programs despite the choice to include only the largest programs.

Characteristics of the Programs

Several questionnaire items were designed to obtain general descriptive information about these largest precollegiate programs: how many students and faculty were involved, how the programs were funded, the primary goals of the programs, where the programs were located (on campus or at other locations), and the length and timing of student participation.

Table 2

Percent of precollegiate students and of total funding that was located within the largest precollegiate program at each institution, by institutional characteristics: 1994

Institutional characteristic	Percent of precollegiate students served by largest programs			Percent of precollegiate program funding within the largest programs		
	Less than 50%	50 to 99%	100%	Less than 50%	50 to 99%	100%
	(percent of programs)					
All institutions	23	30	47	14	38	48
Control						
Public	25	34	41	15	44	41
Private	20	24	56	13	29	59
Level						
2-year	18	32	50	10	40	49
4-year	25	29	45	16	37	47
Region						
Northwest	18	33	49	14	34	52
Southeast	32	27	41	21	39	40
Central	22	31	47	9	43	47
West	17	30	53	1	37	53
Size of institution						
Less than 3,000	14	27	59	9	30	61
3,000 to 9,999	28	32	40	14	47	39
10,000 or more	32	34	34	24	41	34
Upward Bound is largest program						
Yes	34	25	41	12	7	41
No	18	32	50	15	34	50

Note: Data are for largest precollegiate program (in terms of funding) at higher education institutions in the 50 states, the District of Columbia, and Puerto Rico. Percents may not add to 100 because of rounding.

Source: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System, Survey on Precollegiate Programs for Disadvantaged Students at Higher Education Institutions, 1994.

SIZE OF PROGRAMS

The largest precollegiate programs had a total of 317,400 students, with a median of 82 students per program (table 3).[16] This total comprised 60 percent of the approximately 525,100 students who were in all (not just the largest) precollegiate programs for the disadvantaged; however, the overall estimate of 525, 100 is almost certainly an underestimate because respondents had difficulty in estimating the total enrollment and in identifying all precollegiate programs at the institution.[17] To put this enrollment in perspective, one must first adjust for the fact that the precollegiate students were at a mixture of grade levels: roughly 90,000 of all precollegiate students would be expected to graduate from high school in the next year.[18] By comparison, approximately 1.1 million 17-year-olds were economically disadvantaged in 1991.[19] Thus, precollegiate programs for the disadvantaged enrolled a relatively small proportion of the total number of students who might be considered eligible for such programs. Not all of the precollegiate students can be expected to enroll in higher education, and some of these students might have enrolled even without the encouragement of the precollegiate programs, but these estimates might be compared with the total higher education enrollment of 14.5 million to obtain a rough estimate of the potential impact of current precollegiate programs on future higher education enrollment.[20]

On average, the largest programs in public institutions had a greater number of participants (a median of 90 students) than those in private institutions (a median of 65), but since public institutions were also more likely to have precollegiate programs, there was an even greater difference in the total number of precollegiate students served (264,500 versus 52,800). There were also other large differences in the distribution of students. Many more precollegiate students were served at 4year institutions than at 2-year institutions (208,300 versus 109, 100), even though the median sizes were not greatly different (85 versus 75). Upward Bound programs served only a small proportion of the precollegiate students in the largest programs, with 32,300 students compared to 285, 100 in other programs. Since records for Upward Bound indicate that roughly 42,000 students are served nationwide, the choice

Table 3

Median and total number of precollegiate students served, the institution's faculty and staff, and students who worked with the largest precollegiate program in 1993-94, and the mean student/faculty-staff ratio, by institutional characteristics: 1994

Institutional characteristic	Students served by program		Faculty and staff who worked with the program		Students who worked with the program*		Mean precollegiate student/ faculty-staff ratio
	Median	Total	Median	Total	Median	Total	
All institutions	82	317,.400	6	9,600	6	13,500	46.0
Control							
Public	90	264,500	6	6,100	6	8,400	60.3
Private	65	52,800	6	3,400	6	5,100	21.7
Level							
2-year	75	109,100	5	2,600	4	2,200	50.4
4-year	85	208,300	6	7,000	8	11,400	43.8
Region							
Northeast	65	52,100	6	2,700	5	3,600	28.7
Southeast	95	76,300	6	2,700	7	3,400	51.1
Central	75	46,900	5	2,100	6	3,200	26.6
West	89	142,100	7	2,100	6	3,300	83.1
Size of institution							
Less than 3,000	55	88,000	5	3,500	5	3,200	29.5
3,000 to 9,999	100	100,100	6	3,200	8	6,200	43.5
10,000 or more	115	129,200	7	2,900	10	4,100	80.0
Upward Bound is largest program							
Yes	86	32,300	5	3,000	10	4,200	19.4
No	75	285,100	6	6,600	6	9,400	57.7

*Includes institutions where none of the institution's students worked with the program in 1993–94.

Note: Data are for the largest precollegiate program (in terms of funding) at higher education institutions in the 50 states, the District of Columbia, and Puerto Rico. Details may not add to totals because of rounding.

Source: U.S. Department of Education, National Center for Education Statistics, Postsecondary, Education Quick Information System, Survey on Precollegiate Programs for Disadvantaged Students at Higher Education Institutions, 1994.

to sample only the largest precollegiate programs resulted in excluding roughly one-fourth of the Upward Bound students; however, Upward Bound students would constitute at most 13 percent of all precollegiate students even using the larger figure. Since non-Upward Bound students also were excluded through the decision to survey only the largest precollegiate programs, the actual percentage would be less than 13 percent.

The precollegiate programs involved a total of 9,600 faculty and staff, with a median of 6 per program. Public institutions had a lower share of faculty and staff (64 percent) than of students (83 percent), with the result that there was a great difference in the student/faculty-staff ratio in public and private institutions (60 versus 22). Programs at large institutions also had a relatively high student/faculty-staff ratio, with a mean of 80 compared with 30 at small institutions. Upward Bound programs had a relatively low student/faculty-staff ratio (19 versus 58 for other programs)—one indication that while they tended to be small in terms of the number of students served, they were relatively intensive in terms of the services provided.

A median of 6 students at the institution worked with the precollegiate program (e.g., as tutors), with a greater number in 4-year than 2-year institutions (8 students versus 4), and more in large institutions than small institutions (10 students versus 5).

Primary Source of Funding

The federal government was the primary source of funding for 5 1 percent of the largest programs, while state and local governments were the primary source for 20 percent, institutional funding for 14 percent, and private

funding (including both individuals and corporate/foundation funding) for 13 percent (table 4). Federal funding was especially important for public institutions (60 percent versus 36 percent for private institutions) and was more important in the Southeast than in the Northeast (69 percent versus 31 percent). On the other hand, private funding was more important at private institutions than public institutions (28 percent versus 5 percent). As might be expected for the U.S. Department of Education's Upward Bound programs, institutions almost universally stated that federal funding was their primary source of funding (97 percent); this contrasted greatly with how institutions described their other largest programs, with only 30 percent saying federal funding was the primary source.

Table 4.

Primary source of funding for institutions' larges precollegiate program, by institutional characteristics: 1994

Institutional characteristic	Tuition	Institutional funding	Federal government	State/local government	Private individuals	Other sources
	(percent)					
All institutions	114	51	20	13	1	
Control						
Public	1	13	60	20	5	1
Private	1	16	36	19	28	0
Level						
2-year	1	13	57	24	6	0
4-year	1	15	48	18	17	1
Region						
Northeast	2	18	31	33	15	(+)
Southeast	0	5	69	16	9	1
Central	2	1	51	14	22	0
West	1	24	50	16	7	2
Size of institution						
Less than 3,000	2	17	49	16	17	0
3,000 to 9,999	0	9	52	26	12	1
10,000 or more	1	17	53	20	9	1
Upward Bound is largest program						
Yes	0	2	97	0	(+)	1
No	2	20	30	29	19	1

(+) Less than 0.5 percent.

Note: Data are for the largest precollegiate program (in terms of funding) at higher education institutions in the 50 states, the District of Columbia, and Puerto Rico. Percents may not add to 100 because of rounding. Zeros appear in the table when no institution in the sample gave the indicated response.

Source: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System, Survey on Precollegiate Programs for Disadvantaged Students at Higher Education Institutions, 1994.

The ranking of the goals varied depending on the institutional characteristics (table 5). Precollegiate programs at public institutions were more likely than those at private institutions to emphasize high school retention (32 percent versus 17 percent) and increasing the likelihood of attending college (34 percent versus 18 percent) as their single most important goal; programs at private institutions, on the other hand, were more likely to emphasize general academic skills (34 percent versus 12 percent). Programs at small institutions were more likely to emphasize general academic skills than those at large or midsized institutions (27 percent versus 12 to 16 percent).

PRIMARY GOALS OF PRECOLLEGIATE PROGRAMS

Institutions were asked to rank each of six potential goals for their largest precollegiate program in terms of their importance (figure 2)[21] Essentially the same number of institutions reported that increasing college attendance or increasing high school completion was the top goal of the program (28 percent and 26 percent, respectively), but increasing college attendance stood out among these two as being more likely to be among the top three goals (78 percent versus 64 percent). Another goal -increasing general academic skills development—also was frequently indicated, with 20 percent of institutions saying it was their largest program's top goal and 67 percent saying it was

among the top three goals. Each of these three goals was indicated as one of the top three goals for their largest precollegiate program by at least 64 percent of the institutions, while none of the remaining goals was among the top three for more than 45 percent.

iThere also were differences in goals between Upward Bound and other of the largest precollegiate programs. Upward Bound programs were more likely than other programs to emphasize the likelihood of attending college (46 percent versus 21 percent) and completing college (20 percent versus 9 percent), while they were less likely than other
programs to emphasize promoting a particular subject area (0 percent versus 14 percent) and general academic skills (14 percent versus 23 percent).

Primary Location for Program

For the overwhelming majority of precollegiate programs ran by higher education institutions, the primary location for holding the program was the college campus (80 percent; table 6). The main alternative was to hold the program at elementary or secondary schools (19 percent). Programs were more likely to be held on campus at private institutions than public institutions (91 percent versus 73 percent), at 4-year institutions than 2-year institutions (83 percent versus 73 percent), and at small institutions than at large or mid-sized institutions (88 percent versus 74 percent). Upward Bound programs also more commonly took place on campus than other programs (86 percent versus 77 percent).

Table 5

Percent of institutions ranking selected potential goals of the precollegiate program as the most important goal, by institutional characteristics: 1994

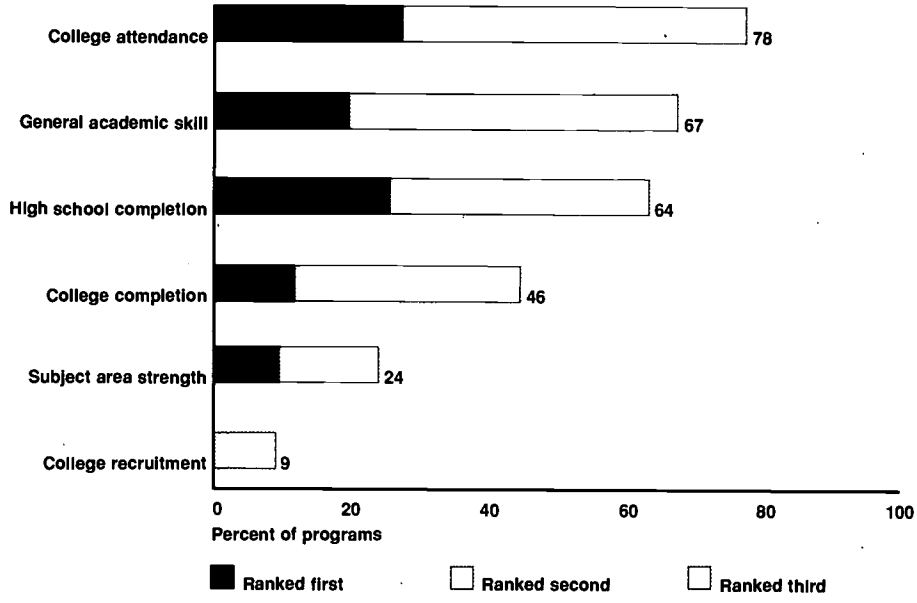
Institutional characteristic	Increase retention in or completion of high school	Increase the likelihood of attending college	Increase the likelihood of completing college	Enhance college recruitment for this institution	Increase general academic skills development	Promote interest/ strength in particular subject area
All institutions	26	28	12	(+)	20	10
Control						
Public	32	34	12	0	12	8
Private	17	18	13	1	34	13
Level						
2-year	30	35	7	0	12	13
4-year	25	25	15	1	24	8
Region						
Northeast	18	17	18	2	23	19
Southeast	30	36	5	0	25	5
Central	26	32	10	0	18	10
West	32	28	18	0	13	4
Size						
Less than 3,000	22	27	9	1	27	12
3,000 to 9,999	32	23	14	0	16	11
10,000 or more	26	39	17	0	12	4
Upward Bound is largest program						
Yes	21	46	20	0	14	0
No	29	21	9	1	23	14

(+) Less than 0.5 percent

Note: Data are for the largest precollegiate program (in terms of funding) at higher education institutions in the 50 states, the District of Columbia, and Puerto Rico. Not shown are the 3 percent of institutions that ranked some goal other than the six listed above as the most important goal. Zeros appear in the table when no institution in the sample gave the indicated response.

Source: U.S. Department of Education, National Center for Educational Statistics, Postsecondary Education Quick Information System, Survey on Precollegiate Programs for Disadvantaged Students at Higher Education Institutions, 1994.

Figure 2
Primary goals of precollegiate programs: 1994



Source: U.S. Department of Education, National Center for Educational Statistics, Postsecondary Education Quick Information System, Survey on Precollegiate Programs for Disadvantaged Students at Higher Education Institutions, 1994.

Despite the widespread use of college campuses as the primary location, there were some differences with respect to location based on the priorities of the programs (table 7). The greatest use of elementary or secondary schools as the primary locations occurred when programs had either increasing students' completion of high school (34 percent) or increasing students' probability of attending college (24 percent) as their top goal; among the remaining programs, the range was from 0 percent (for programs seeking to enhance college recruitment) to 8 percent (for programs seeking to increase students' probability of attending college).

Hours of Participation

When programs operated. Institutions were asked the number of hours a typical precollegiate student spends in program activities during the academic year and during the summer. An estimated 57 percent of the precollegiate programs operated during both the academic year and the summer, while 33 percent operated during the summer only, and 10 percent only during the academic year (table 8). Precollegiate programs at large institutions were more likely to have full-year programs than those at small institutions (74 percent versus 47 percent), while close to half (45 percent) of the programs at small institutions offered activities during the summer only. All Upward Bound programs operated during the full year, compared with only 38 percent of other precollegiate programs.

Just as 57 percent of the programs operated during the full year, an equivalent percentage of the students (58 percent) were in such programS.[22] However, for those programs that operated for less than a full year, the distribution of students differed from the distribution of programs. Programs that operated only during the summer accounted for 33 percent of all programs but had just 8 percent of all students. Rather, students who were not in full year programs tended to be in programs that operated only during the academic year (10 percent of programs, but 34 percent of students). 'there were also some differences based on institutional characteristics. Programs at large institutions had a greater proportion of students in full-year programs than programs at small or mid-sized institutions (72 percent versus 47 to 49 percent).

Since 57 percent of the programs operated during both the summer and academic year, while others operated during only one time period or the other, institutions had several strategies available for apportioning the time. For example, one possibility is that programs that operate during the entire year would require the same level of activity as other programs while dividing that activity over the entire year. In fact, however, the intensity of the program was related to the time period in which it operated (figure 3). Programs that operated only during the academic year were the

Table 6

Percent of institutions using various locations as the primary location in which the largest precollegiate program is held, by institutional characteristics: 1994

Institutional characteristic	College Campus	Elementary or secondary schools	Other locations
All institutions	80	19	1
Control			
Public	73	26	1
Private	91	9	0
Level			
2-year	73	27	0
4-year	83	16	1
Region			
Northeast	87	13	1
Southeast	77	22	1
Central	81	19	0
West	75	25	1
Size of institution			
Less than 3,000	88	12	0
3,000 to 9,999	74	25	1
10,000 or more	74	24	1
Upward Bound is largest program			
Yes	26	13	(+)
No	77	22	1

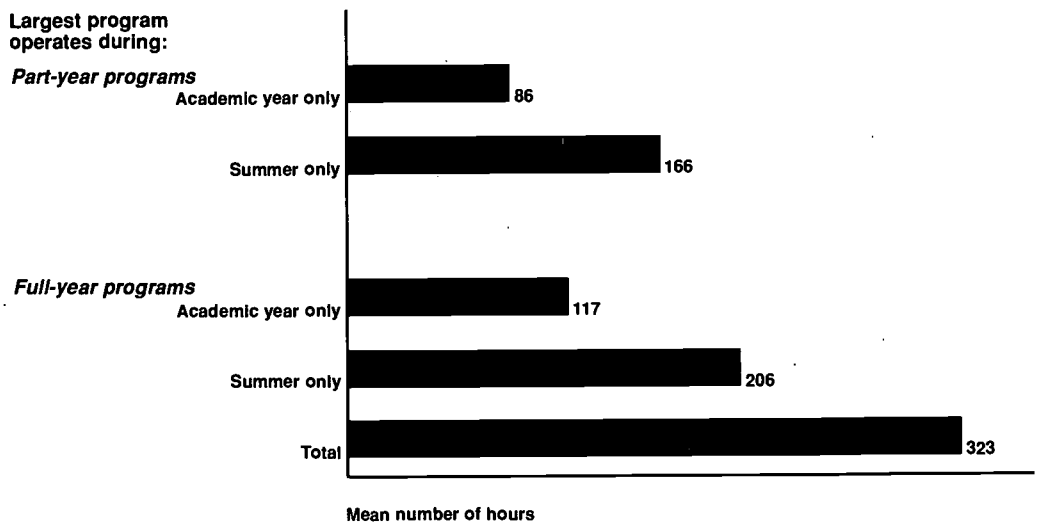
(+) Less than 0.5 percent

Note: Data are for the largest precollegiate program (in terms of funding) at higher education institutions in the 50 states, the District of Columbia, and Puerto Rico. Percents may not add to 100 because of rounding. Zeros appear in the table e when o institution in the sample gave the indicated response.

Source: U.S. Department of Education, National Center for Education Statistics , Postsecondary Education Quick Information System, Survey on Precollegiate Programs for Disadvantage Students at Higher Education, 1994.

Figure 3

Mean number of hours spent in program activities by precollegiate students: 1994



Source: U.S. Department of Education, National Center for Educational Statistics, Postsecondary Education Quick Information System, Survey on Precollegiate Programs for Disadvantaged Students at Higher Education Institutions, 1994.

Table 7

Top goal and the primary location of the largest precollegiate programs: 1994

Institutional top goal	Primary location: College campus	Primary location: Elementary or secondary schools	Primary location: Other locations
Increase completion of high school	65	34	1
Increase probability of attending college	76	24	0
Increase probability of completing college	92	8	0
Enhance college recruitment	100	0	0
Increase general academic skills	92	7	1
Promote particular subject	94	6	0

Note: Data are for the largest precollegiate program (in terms of funding) at higher education institution in the 50 states, the District of Columbia, and Puerto Rice.

Source: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System, Survey on Precollegiate Programs for Disadvantaged Students at Higher Education Institutions, 1994.

Table 8

Percent of the largest precollegiate programs in 1993-94 with program activities in the academic year only, in the summer only, or in both time periods, and the percent of students in each type of program, by institutional characteristics: 1994

Institutional characteristic	Percent of programs during: Academic year only	Summer only	Both	Percent of precollegiate students in programs operating during: Academic year only	Summer only	Both
All institutions	10	33	57	34	8	58
Control						
Public	12	28	60	35	6	58
Private	8	41	51	31	15	54
Level						
2-year	13	36	51	50	6	44
4-year	9	31	60	26	9	65
Region						
Northeast	13	43	44	38	16	46
Southeast	7	27	66	32	8	60
Central	9	27	64	27	11	63
West	13	33	53	37	4	59
Size of institution						
Less than 3,000	8	45	47	42	9	49
3,000 to 9,999	14	28	58	44	9	47
10,000 or more	9	17	74	21	7	72
Upward Bound is largest program						
Yes	0	0	100	0	0	100
No	15	47	38	38	9	53

Note: Data are for the largest precollegiate program (in terms of funding) at higher education institutions in the 50 states, the District of Columbia, and Puerto Rico. Percents may not add to 100 because of rounding. Zeros appear in the table when no institution in the sample gave the indirect response.

Source: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System, Survey on Precollegiate Programs for Disadvantaged Students at Higher Education Institutions, 1994.

least intensive (with typical students spending a mean of 86 hours per year), and programs that operated during the entire year were the most intensive (a mean of 323 hours). Moreover, typical students actually spent more hours on average in summer program activities if they were in full-year programs (206 hours) than if they were in summer-only programs (166 hours). Thus, though fewer months are available during the summer than in the academic year, typical students spent more of their time in program activities during the summer when there presumably was less conflict with other school activities.

Number of hours of activities. Typical students in precollegiate programs spent a mean of 247 hours in program activities during the academic year and the summer combined (table 9). Typical students spent more hours in program activities in 4-year institutions than in 2-year institutions (277 versus 189) and in large institutions than in small institutions (284 versus 216).

Table 9

Mean number of total hours spent in program activities during the academic year, during the summer, and during both time periods, and the mean number of years a typical precollegiate student continues to participate in the largest precollegiate program, by institutional characteristics: 1994

Institutional characteristic	Total hours during the academic year[1]	Total hours during the summer[2]	Total hours combined[3]	Number of years a typical student participates
All institutions	112.3	191.69	247.4	2.9
Control				
Public	117.7	187.0	249.8	3.0
Private	100.9	199.1	243.5	2.6
Level				
2-year	108.7	137.4	189.2	2.7
4-year	113.9	217.6	276.7	2.9
Region				
Northeast	101.8	187.4	221.5	2.3
Southeast	110.2	183.3	251.5	3.2
Central	113.9	199.2	255.1	2.8
West	123.9	199.2	255.1	2.8
Size of Institution				
Less than 3,000	89.0	181.6	216.3	2.5
3,000 to 9,999	122.6	204.1	263.0	3.0
10,000 or more	128.8	194.1	283.8	3.3
Upward Bound is largest program				
Yes	141.0	291.6	432.6	3.5
No	88.4	139.9	166.0	2.6

[1] Includes only those institutions with programs held during the academic year.

[2] Includes only those institutions with programs held during the summer.

[3] Based on the sum of the total hours during the academic year and the total hours during the summer. If institutions only offered program activities during one part of the year, then that amount is treated as the total for the full year.

Note: Data are for the largest precollegiate program (in terms of funding) at higher education institutions in the 50 states, the District of Columbia, and Puerto Rico.

Source: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System, Survey on Precollegiate Programs for Disadvantaged Students at Higher Education Institutions, 1994.

Table 9 shows how much time typical students spent in program activities if all programs are combined. As also shown in figure 3, the typical student spent more time in precollegiate programs in the summer than in the academic year (a mean of 192 hours, compared with 112).[23] Students in precollegiate programs at 2-year institutions spent an especially large number of hours in the summer (a mean of 218 hours versus 137 hours at programs in 4year institutions), though students in 2-year and 4-year institutions had roughly equivalent hours of precollegiate program activities during the academic year (109 hours and 114 hours, respectively). A different pattern occurred for

students in precollegiate programs in large institutions as compared to those in small institutions, with precollegiate students at large institutions spending a greater mean number of hours in the academic year (129 versus 89), but essentially the same number of hours in the summer (194 versus 182).

Upward Bound programs again were much more intensive than other precollegiate programs, with a mean of 433 hours over the full year, compared with 166 hours for other programs. In part, the difference was due to Upward Bound programs' greater use of full-year programs (noted earlier), but even for the academic year and the summer alone, students in Upward Bound programs had more hours of activities (141 versus 88 during the academic year, and 292 versus 140 during the summer).

Length of student participation. On average, institutions reported that typical precollegiate students in their largest programs participated for 2.9 years. Programs had somewhat longer periods of participation if they were at large institutions than if they were at small institutions (a mean of 3.3 years versus 2.5 years), and if they were Upward Bound programs than if they were other programs (3.5 years versus 2.6 years).

Notes

[13] If one includes eight institutions that a U.S. Department of Education list showed as having Upward Bound, but that reported having no precollegiate programs, the estimate would be 32 percent. Since no data were collected on these eight programs, and since they would have only a minor effect on the statistics, these eight institutions will be ignored in this report.

[14] Upward Bound programs are relatively intensive, so they typically are the largest precollegiate program at each institution in terms of funding, but are not necessarily the largest in terms of the number of precollegiate students. In fact, while Upward Bound programs comprised 30 percent of the largest programs , they had only 10 percent of the precollegiate students in the largest precollegiate programs (see table 3 later in this report), suggesting that they are relatively small from a national perspective in terms of the number of students served.

[15] Most likely, statistics for all Upward Bound programs would be roughly similar to those presented here, since the criterion of picking the largest precollegiate program resulted in including 120 of the 147 Upward Bound programs (unweighted) that were identified at the institutions reporting having precollegiate programs. But this study would have been designed differently if the intention were to provide a general description of all Upward Bound programs.

[16] Medians rather than means are reported because the presence of a few very large precollegiate programs would cause the mean to overstate the "typical" size of a program. For example, while the West had almost half the total number of precollegiate students, this was due to the presence of a few very large programs in the West; the mean size for the West would appear exceptionally high, while the median size was not even the largest of the four regions.

[17] The estimate was computed by dividing the number of precollegiate students by the percentage of all precollegiate students that were in the largest program. Estimates were computed within each institution, and then summed across institutions. A similar calculation suggests that the largest programs had approximately 64 percent of the total funding, although this estimate is only an approximation and probably understates the total funding for all precollegiate programs.

[18] The estimate of 90,000 is based on 34 percent of precollegiate students being juniors and seniors in high school (to be presented in chapter 4 of this report), so that roughly half this number (i.e., 17 percent) were seniors. Some additional students might graduate from high school whose experience in precollegiate programs was prior to their senior year.

[19] Using a definition of the economically disadvantaged as those whose family incomes are under 150 percent of the poverty level. Statistics are based on the U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, "Poverty in the United States, 1991," series P-60, No. 175, August 1992, table 6. Some other definitions of disadvantaged would produce an even greater disparity between the number of precollegiate students and the number who were eligible. For example, over half of all students could probably be considered educationally disadvantaged in the sense that they were the first generation in their family to (potentially) receive a college degree. Among bachelor's degree recipients in 1990, 48 percent met this criterion. *National Study of Student Support Services, Interim Report: Volume I—Program Implementation*, prepared by Westat, Inc. for the U.S. Department of Education, 1994, 2–21.

[20] The data on higher education enrollment are the estimated 1992 total fall enrollment, including both full-time and part-time students, from the *Digest of Education Statistics 1994*, op. cit., 176.

[21] Institutions could also write in another goal besides those listed on the questionnaire; however, few institutions added to the list provided.

[22] Since institutions provided information about "typical" students, and individual student's full-year status was not necessarily the same as the program's.

[23] These means are based only on those programs with activities during the appropriate time period (i.e., zeroes are excluded). No distinction was made on whether the program operated during both the academic year and the summer, or during one time period only.

Toward a Typology of Early Intervention Programs

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Early intervention, an increasingly popular approach to enhancing high school completion and college access, is growing rapidly in amount of resources invested, number of programs and in diversity. Such growth and diversity calls for development of a classification system. The rapid growth, although largely unchronicled, is apparently occurring in both public and private sectors and at all levels, from small-scale local initiatives to national programs that are linked to state collaboration. The 1998 large-scale federal investment in the GEAR UP (Gaining Early Awareness and Readiness for Undergraduate Programs) initiative clearly illustrates the national view that early intervention is a wave of the future. However, early intervention is far from a new concept. Early intervention initiatives have actually existed for a long time, even before the enactment of the original Higher Education Act of 1965. The long-standing history and, at times, celebrated nature of early intervention has encouraged the current widespread, national support for such programs.

Early intervention programs have proliferated in kaleidoscopic variety. Over the past several decades some have persisted under the same name for decades but have experienced "mission drift". Others, of both governmental and private sector origin, have come and gone in an ephemeral fashion. Whatever their origin and longevity, early intervention programs vary greatly in virtually every aspect. This is especially with regard to the diversity of program oversight, sources of funding, institutional involvement, services provided, levels of student financial assistance, populations served, student admission standards and performance requirements. Such broad variation of program elements has hampered widespread identification of early intervention as a significant and cohesive national "movement", constrained communication among programs for possible collaboration, limited possibilities for evaluation across programs and may have restricted potential support.

Despite strenuous efforts over the past several decades to remove economic and other barriers to college access, inequities of opportunity for postsecondary education remain a problem. Recent large increases in funding for student financial aid have probably resulted in a "plateau effect" with further major increases or new initiatives unlikely in the near future. These and other conditions and trends, discussed later in this chapter, strongly indicate that early intervention may well be the primary means of equalizing college access for at least the next few years. We believe that early intervention as a concept would benefit greatly from the development of a typology that would help identify common program characteristics. It would provide a much-needed systematic overview of the scope of early intervention programs and uncover possible gaps in the availability of some types of programs and duplication of other types. A typology would also allow for the comparison of similarities across different types of programs and variance within types. Such a typology would be of use to program directors, administrators, evaluators and funding agencies. As the field of early intervention grows, the typology can be modified and enhanced to encompass new dimensions and varieties of programs and services. Flexibility is crucial to the usefulness of a typology of this nature.

This chapter begins with a review of the extent of the ongoing inequities in opportunity for college access and differentials in successful program completion. We then describe the current status and possible "plateauing" of student financial aid, the principal means of overcoming inequity in college access to the present time. Next, we discuss the known varieties of early intervention program elements. This is followed by a review of the literature that has attempted to catalog early intervention programs, and identify several initiatives that triggered eras of rapid growth. We discuss attempts that have been made to develop a central or unifying concept for early intervention. We then state our case for the need for a classification scheme and how movement toward meeting this need may best be approached. Specifically, we review the concepts of taxonomy and typology and their applications in science and the field of education, and describe our rationale for selecting typology as the most useful approach. We then suggest some of the prominent aspects and program variables that may be contained in a useful typology and

indicate some possible applications of such a typology. In the process of developing the framework for the typology, attention is given to the potential users, their needs and interests. We conclude the chapter by suggesting practical steps to be taken toward this type of user-oriented typology development.

The high cost of low educational attainment

More than in any other time in our history, postsecondary education represents the main pathway to the American dream of economic success and social status. A high level of educational attainment for all whom desire it and can benefit from it is both a national economic imperative and a means of personal fulfillment. In the "knowledge society" that our nation has become, those without at least a high school diploma are significantly disadvantaged, especially compared with those who attain at least a baccalaureate degree. Census data reveal that by 1990 the average male college graduate's annual income of $39,238 was nearly double the male high school dropout's income of $20,902 (Horn and Carroll, 1995, p. 404). By 1995, these figures were $45,266 and $22,185, respectively (Horn and Carroll, 1997, p. 422). The income gap has continued to grow rapidly, perhaps due largely to more emphasis on technical skills obtained predominantly in postsecondary programs, and the increasing reliance on educational credentials as a requirement for job applications.

Level of educational attainment highly correlates with the likelihood of being employed, and being in a professional or managerial occupation, among other important factors related to socioeconomic status (National Center for Education Statistics, 1997, pp. 420–1). Educational attainment is also related to welfare status. In 1992, 17 percent of persons who did not complete high school received income from AFDC (Aid to Families with Dependent Children) compared to less than one percent of persons with at least a bachelor's degree (National Center for Educational Statistics, 1995, p. 96).

Criminal arrest and incarceration rates are also related to level of educational attainment. Several states have intensively studied the relationship. In New York, for example, it was found that "Seventy-five percent of all inmates in the State's prisons have no high school diploma and 90 percent of all inmates in New York City jails have no high school diploma or equivalent" (Waldon, 1996, p. 26). "The state of California built 21 new prisons since 1984 but only one state university" (Justice Policy Institute, 1997, http). This trend is not limited to only a few selected states but also occurs nationwide. Between 1973 and 1993, for example, "state corrections spending increased 1200%, while state expenditures for higher education increased only 419%" (Justice Policy Institute, 1997, http). A number of studies have compared the cost of criminal justice involving youth with the cost of effective early intervention strategies. For example, a recent RAND report cited a Ford Foundation study of the effectiveness of high-school graduation incentives offered to at-risk youth in California. "Graduation incentives were found to significantly increase high school graduation and college-enrollment rates among participants. The program also had noteworthy success in reducing crime. Observed arrests for participating students were only three-tenths that of control students" (Greenwood, Rydell, Chiesa and Model, 1996, p.13).

Target populations of early intervention programs

Since the primary goal of early intervention is to increase access to higher education, the targeted participants for such programs are typically K-12 students who have one or more factors indicating they are at risk of not completing high school, much less planning for college. A major recent study called " Confronting the Odds: Students at Risk and the Educational Pipeline" examined data for 1992 high school graduates from the National Longitudinal Study of 1988 (NELS: 88/94). In this study,

> Students were considered at risk if they had one or more of the following characteristics: were from a single parent household, had an older sibling who dropped out of high school, changed schools two or more times other than the normal progression (e.g., from elementary to middle school), had C's or lower grades between sixth and eighth grade, were from a low SES family, or repeated an earlier grade (Horn and Carroll, 1997, p. vi).

The risk factors elucidated by Horn and Carroll provide a basis for building a meaningful profile of at-risk youth. Variations of this profile are often utilized in the admission criteria for early intervention programs. Similarly, the specific goals of early intervention are to reduce the disparity between youth who fit into the at-risk profile and those who are not at-risk. Horn and Carroll found that only 56 percent of at-risk tenth grade students aspired to a bachelor's degree, compared to 81 percent of their classmates. Similarly, less than half (44 percent) of tenth graders were at-risk of being unprepared academically to attend a four-year college, compared with three-fourths (75

percent) of other tenth graders (Horn and Carroll, 1997, p. iii).
Another study investigated at-risk students who did enroll in college. The researchers termed these students "resilient" because they made it to college despite being at moderate risk (having two risk factors) or high risk (three or more risk factors) (Horn and Chen, 1998, p. 12). The researchers found that parental and peer influences were potent factors in college going. They also found that participation in college preparation activities such as gathering information about financial aid and "getting help preparing for entrance exams and the college application process increased the odds of enrolling in a 4-year college" (p. iii). In addition, the resilient students "who participated in high school outreach programs had almost double the odds of enrolling in a 4-year college than their peers who did not participate" (p. 27). The study included many variables that signified intervention by parents, peers and school personnel. "In the end, this study showed that intervention, whether on the part of the parents or the school, played a positive role in helping moderate to high- risk students make the transition from high school to college" (p. 27).

The role of student financial aid

Early intervention programs are increasingly important because student financial aid and other traditional initiatives have failed to achieve equal access to post-secondary education for low-income youth. The federal government alone expended over $300 billion in need-based student aid in the decade of the 1980's, and the level of expenditures increased in the 1990's. However, despite these massive expenditures national data reveal that, from the 1970's up till present, family income has remained the primary determinant of college going at all academic ability levels (Mortenson, 1998). Furthermore, recent attacks on affirmative action and race-based financial aid threaten to diminish prospects for education beyond high school for minority youth, many of whom are significantly over-represented within low-income categories.

Student financial aid has been the principal federal strategy to equalize opportunity for postsecondary education ever since the creation of the Higher Education Act of 1965. However, as Gladieux, Astor and Swail point out "The problem of unequal opportunity has proved more intractable than anyone anticipated in the early years of the Higher Education Act" (1998, p. 19). It is probable that the factors inhibiting college going are too complex to be remedied by financial assistance alone.

By the early 1970's, the perception was that a need-based grant program should be widely available to ensure access to college. However, by the early 1980's emphasis began to shift toward loans and away from "gift aid" such as grants and scholarships. Also, during the 1980's tuition and other expenses began to increase at a faster rate than inflation and appropriations for Pell Grants, resulting in an increased use of loans by needy students. For the 1997–98 academic year federal loans constituted 54 percent of all student aid, whereas Pell Grants made up only 10.3 percent (The College Board, 1998a, p. 4).

Both grant and loan aid programs have failed to keep pace with rising tuition and fee amounts. Over the last two decades the average price of attendance for all institutions has risen by 304 percent (The Institute for Higher Education Policy, 1998 p. viii). Tuition increases are of greater impact to low-income families than to those with middle or high income. In 1995, the average price for an education at a four-year public university equaled 40 percent of the family income of families in the lowest income quintile. For an education at a private institution the cost amounted to well over one hundred percent of the family income (Gladieux, Astor, Swail, 1998, p. 124). The College Board has tracked three trends, namely, rapid increases in the price of college to students, shift in student aid away from gift aid to loans, and the failure of family income to keep pace with inflation. For low-income families who are usually the constituencies of early intervention programs, these trends have converged to wreak particular damage on their potential to send their children to college (The College Board, 1998b).

Perhaps even more insidious is the trend toward the strategic use of student aid to increase enrollment of students who, unlike educationally and economically disadvantaged students, are likely to need few if any resources to overcome shortcomings in academic preparation and motivation to persist and graduate. Baum recently commented on the concerns of persons devoted to the original aims of need-based aid: "They fear that the new attention to the strategic use of financial aid will negate years of working toward an equitable distribution of need based student aid and make college, especially institutions in the private sector, once again the domain of the wealthy" (1998, p.12).

Despite growing skepticism about the effectiveness of student aid to achieve equal opportunity, student aid is clearly seen as politically popular. At least half of the more than 20 million postsecondary students are aid recipients, and

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they and their families represent a significant voting bloc. In addition to political pressure from these mainly middle class voters, institutional associations vigorously lobby for financial aid to help their students pay for the rapidly increasing tuition and other costs. These pressures resulted in a hard-won increase in Pell Grants in the 1998 Reauthorization of the Higher Education Act. The maximum Pell grant will be $3,125 in 1999-2000 compared to $3,000 in 1998-99. Even more importantly, the Taxpayer Relief Act of 1997 created tuition tax breaks beginning in the 1998 tax year that are estimated to total $12-15 billion annually by the year 2002. However, the provisions of these tuition tax breaks are not expected to benefit families in the lowest income brackets (Barton, 1997, p.20; Hauptmann in Gladieux, Astor, Swail, 1998, p.141). These, and many other factors, led the Educational Testing Services' Policy Information Center to recently issue a report entitled "Toward Inequality: Disturbing Trends in Higher Education" (Barton, 1997). The study concluded that socioeconomic status is a major factor in completing high school, achieving academic readiness for college during the high school years and entering a four-year college rather than a two-year college (where the chances of successfully transferring to and achieving a Bachelors degree in a four-year college are slim). Overall, the researcher found that there has been a decline in opportunity for lower income students (Barton, 1997, p.19).

It is very possible that a plateau in financial aid will occur over the next years. With the new initiatives to generate student aid in form of foregone revenue for the federal government through tax credit programs and continued failure to reach the authorized levels of funding for the Pell Grant program, changes in the bleak landscape of student aid are unlikely. Impact of the tax credit programs on the Federal budget will be carefully studied in the early years of the 21st century. Until then, further major increases in Pell or other "gift aid" funding are unlikely as long as the "tuition spiral" noted by Gladieux and Swail (1998, p.3) continues to outdistance student aid increases. Congress could not be blamed for suspecting that whatever the level of increased appropriations, the prices (especially tuition and mandatory fees) would grow to capture those increases. Certainly the record of the last two decades provides ample ground for such suspicions.

Gladieux and Hauptmann, among others, have urged that future student aid programs be focused more specifically on encouraging student retention and persistence of at-risk students (Gladieux & Hauptmann, 1995, p.88). Clearly, this focus suggests aid programs that can be linked to early intervention programs. Early intervention is a promising strategy that would alleviate financial constraints by drawing on alternative funding resources.

Overviews of early intervention programs

The most comprehensive attempt to date to develop an overview of program offerings is the report entitled Early Intervention Programs: Opening the Door to Higher Education (Fenske, Geranios, Keller & Moore, 1997). Earlier, in 1993, the American Council on Education (ACE) published a compendium of "more than 2000 curriculum projects, discipline-related initiatives, faculty development programs, and student recruitment and retention efforts" related to enhancing ethnic diversity in higher education (Mintz, 1993, p. ix). The compendium was a follow up volume to an earlier ACE handbook (Green, 1989). Among the synoptic descriptions in the Mintz (1993) compendium are numerous early intervention programs identifiable by their focus on encouraging minority students in elementary and secondary schools to attend college. More recently, the American Association for Higher Education (AAHE) published a directory focused on a specific type of early intervention program called school-to-college partnerships (Wilbur and Lambert, 1996).

Another recent effort to survey early intervention programs focused on a type of early intervention that is based in institutions of higher education rather than in entities outside of these institutions (e.g. civic organizations, private businesses, state and local agencies, K-12 institutions, and private nonprofit foundations). The project produced The Survey on Precollegiate Programs for Disadvantaged Students at Higher Education Institutions (Chaney, Lewis & Farris, 1995). This survey identified and described only the largest single such program in each of 1,576 institutions in a sample drawn from 5,317 institutions. Perhaps because of the focus on service to disadvantaged students and the special interest of the researchers in Upward Bound programs, the survey found that only about one-third (32%) of the institutions had developed on-campus programs, and at about half (47%) of these only one of any size was identified. This finding is not entirely consistent with the ACE survey, which suggested a greater prevalence of early intervention programs among the 2,000 institutions they surveyed. Fenske et al. used two large research universities as case studies. These authors' found that even though many early intervention programs were identified, the number was unlikely to include all those operating in each institution. Neither of the campuses provided a central coordinating location that could identify all early intervention programs. Most of the programs identified were located by

anecdote or through personal knowledge of individuals. Chaney et al. asked a single respondent at each institution only if they knew of "any precollegiate programs for disadvantaged students" (p. B-3). If the respondent checked "no" there were no more follow-up questions; if the response was "yes" the respondent was asked to name the largest precollegiate program. No questions were asked regarding the number or existence of programs other than the largest one known to the respondents. The researchers discovered that "in the pretest for the survey, it was found that institutions have difficulty in identifying and comparing all their programs," a finding consistent with that of Fenske et al. in their survey of the two large institutions.

Clewell, Thorpe, & Anderson focused on early intervention programs in mathematics and science in two publications. The first, a 1987 directory of programs, entitled Intervention Programs in Math, Science, and Computer Science for Minority and Female Students in Grades Four through Eight provided descriptions of intervention programs that target minority and/or female students. The directory listed 163 early intervention programs in mathematics and science programs by state, program features and activities, subject areas, and student characteristics (Clewell, Thorpe, Anderson, 1987). In a follow-up publication to the directory, the authors attempt to describe "the strategies, structure and operation of intervention programs for minority and female students in grades 4 through 8" (Clewell, Anderson, Thorpe, 1992, p. xiii). In addition, the researchers investigate the linkage between research and practice as expressed in the implementation of effective strategies for service providers in math and science intervention programs.

Perna (1995) surveyed mainly the limited number of states that had received funding under the National Early Intervention Scholarship Program (NEISP) established as part of the 1992 amendments to the Higher Education Act of 1965. Six states received NEISP funding for the 1994-95 academic year (California, Indiana, Maryland, New Mexico, Vermont, and Washington), and Perna described their programs along with non-NEISP programs established by several other states. She discussed the goals stated by many of the programs and identified considerable diversity among the limited number of programs surveyed. The goals ranged from increasing high school graduation rates, enrollment of at-risk students in math and science courses, and increasing college enrollment rates in in-state colleges to "improve the overall quality of life for state residents" (p.6). She also described the I Have A Dream (IHAD) program, probably the best known of all those established under private initiative.

Perna and Swail (1998) provide overviews and descriptions of a variety of early intervention programs that originated from federal initiatives. They also surveyed state-sponsored programs and provide a brief overview of private initiatives. Their report emphasizes the immense variation among early intervention programs and suggests avenues for future research. They conclude by recommending a careful and systematic evaluation of existing programs.

The U.S. Department of Education has a website for middle school students and their parents (<*http://www.ed.gov;thinkcollege/index.htmb*>). The website presents a directory of early awareness programs, an important aspect of the larger field of early intervention. Five categories are included in the directory: geographical area served, grade level, type of students served, services provided adn type of participating or sponsoring organizations. The categories aid the user in searching for specific programs, and illustrate the usefulness of a classification scheme in organizing information about early intervention.

Early intervention comes of age

A review of the prolific, but disorganized, literature on early intervention suggests that certain "defining initiatives" led to five eras of growth.

1. TRIO. In the mid-1960's the Great Society initiatives of the Johnson Administration included the War on Poverty. Related to these initiatives was federal legislation featuring early intervention programs for disadvantaged students to encourage completion of high school and access to college. The three key programs for this purpose, widely referred to as the TRIO programs, have now been in existence over 30 years. They include (a) Upward Bound which offers potential first-generation students special instruction in college-preparation courses (b) Student Support Services which provides remedial instruction and counseling, and (c) Talent Search, offering counseling and guidance to students in grades 6 through 12. Like the mid-1960s federal student financial aid initiatives that were modeled after existing state programs (Marmaduke, 1983, p. 63), the TRIO programs utilized a variety of existing early intervention initiatives. TRIO, as the first large-scale federal

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initiative, took awareness of early intervention to new heights (see Wolanin, 1997, for the history of the TRIO programs over three decades).

2. I Have a Dream. Private early intervention initiatives had existed before the TRIO legislation, and may have provided models for the programs. A Better Chance, for example, is a private initiative that was established in 1963 (see Levine and Nidifer, 1996, pp.164–65). However, in 1981, a "defining initiative" occurred when Eugene Lang made a spontaneous promise to sixth graders at the East Harlem school he had attended as a youth. He promised full tuition college scholarships to all 61 students in the class if they graduated from high school. Lang's philanthropic gesture led to the development of the I Have A Dream foundation that now includes projects in about 30 states in over 60 cities and involves over 12,000 students. IHAD has served as an inspiration for innumerable other private initiatives and some public ones as well. For example, Arizona's ASPIRE program and New York's Liberty Scholarship and Partnership program were both modeled after IHAD (Fenske, et. al., 1997, pp.49–52).

3. School-College Collaboration. In the 1970's and early 1980's, a number of initiatives involved collaboration between school districts and colleges, but these were mostly isolated projects unconnected to any larger movement. However, beginning in the early 1980's interest in educational reform became more widespread. Then, in 1984 the American Association for Higher Education, among other national associations, were inspired by the A Nation at Risk report to focus on school-college collaboration as a major facet of educational reform. AAHE dedicated its 1984 national conference to school/collaboration, and in 1990 established an initiative that in 1993 became the Education Trust. The Trust continues to spearhead systemic changes, many of which are specifically of an early intervention nature (American Association for Higher Education, 1995; Haycock, 1996).

School-college collaborations continue to expand and receive support from many quarters. Fenske et al. (1997) identified such initiatives as among the most active and effective early intervention programs they surveyed (p.16). A central theme of the recent federal initiatives is the importance of school-college partnerships. Specific attention is paid to linking two and four year colleges with middle schools in low-income areas. These partnerships are considered to be valuable mechanisms for facilitating the smooth transition from K-12 to higher education for students who are traditionally "at risk" of exclusion from college education and for dropping-out prior to completion a college degree. Collaborative efforts between schools and colleges may include: college visits, after-school activities, mentoring, articulation of admission standards, tutoring, scholarships, and college-level summer programs for high school students.

4. The State Grant Model-NEISP. Federal grants to states specifically to establish early intervention programs are rooted in the existing National Early Intervention Scholarship and Partnership (NEISP) program established in the 1992 federal Reauthorization of the Higher Education Act. NEISP was a "defining initiative" because it represented the first federal-state collaboration aimed at early intervention. The grants are awarded for the provision of scholarships, college information and early intervention activities. State programs target services to low-income students including the provision of college scholarships. State awards do not require specific linkages with community organizations, but these are strongly encouraged. Many of the NEISP programs that are recognized as effective involve local organizations. In FY98, nine programs received funding under NEISP. The total expenditure for the nine programs was $3.6 million.

One concern with NEISP is the erratic funding history of the program. For it's initial year (FY93) NEISP was appropriated $200 million. In it's second year the funding base nearly doubled. However, as the result of stringent cutbacks in federal spending, NEISP was reduced to $3.1 million for FY95. As a result, certain existing state programs faded. The following fiscal year appropriations were increased by $500,000 with the inclusion of six new NEISP states. The current nine NEISP States are California, Indiana, Maryland, Minnesota, New Mexico, Rhode Island, Vermont, Washington, and Wisconsin. Although each of these programs is unique, certain common components of mentorship, counseling, academic support, and financial support exist in all programs including: 1) Guidance counseling and tutoring for at-risk students who take advanced or rigorous courses in the sciences and other core academic areas, 2) scholarships for gifted students and information about financial aid programs in higher education, 3) college visits and summer programs, and 4) public information campaigns.

5. GEAR UP and High Hopes. The primary early intervention initiative that was established in the 1998 Higher Education Amendments is GEAR UP. This initiative has been instituted as a grant program with an authorization of $120 million for FY99. Two types of grants are included in the GEAR UP program. The first type of grant was conceived within President Clinton's "High Hopes" proposal, which requested federal support for the establishment of school-college partnerships. The other component of GEAR UP is formulated as a state grant, structured around the existing NEISP. The school-college collaboration emphasis of the President's High Hopes proposal and the established NEISP model are merged as a twofold federal strategy for bolstering the educational attainment rates of at-risk youth.

A unifying conceptual basis for a typology of early intervention

In order to develop a general working definition for early intervention we use the same approach taken by Fenske, et al. in Early Intervention Programs: Opening the Door for Higher Education. Fenske et al. adopted the NEISP mission statement which includes the following four goals for participating states: (a) guarantee financial assistance to attend college for low-income youth who complete high school and (b) form partnerships with school districts, colleges, community organizations and businesses to provide support services and information about financial aid and the advantages of attending college to such youth, (c) provide support services, and (d) offer information about college for students and parents (Higher Education Act of 1992, P.L. 102–325, 20 USC 1070a-21). This mission statement captures many, but not all, of the components of many early intervention programs. However, Fenske et al. went on to describe numerous other types of programs, suggesting that even the broad NEISP mission statement did not capture all facets of the diverse early intervention programs. They indicated that nearly all of the early intervention programs described in their report include at least one of the aforementioned elements of the mission statement.

Fenske et al. pointed out that "early intervention" is a generic concept used in many fields. For example, health-related fields refer to early intervention as a variety of preventive techniques, and in education the term has specific applications in the fields of early childhood and special education. The Fenske et al. report "focuses primarily on programs for school children that affect their persistence to high school graduation and enrollment in postsecondary education" (1997, p. 7). Their initial attempts at classification began with differentiating "academic outreach" programs from the more general concept of early intervention. Academic outreach was defined as "Those programs that originate from the schools, colleges, and universities themselves" regardless of the source of funding. Their research further differentiated academic outreach programs into two types, namely, (a) those that encourage "at-risk students to plan for college with no focus on a particular academic discipline", and (b) those that focus "on recruiting and preparing promising at-risk students for matriculation into specific academic disciplines" (pp.8–9). Their survey then extended to identify a wide range of private initiatives, including IHAD and several other examples of programs that are national in scope. Their range of private program examples extended to Project Wings (Wise investment in the Next Generation of Students) in Phoenix, Arizona which focused on pupils in a single kindergarten class and their parents "in a lower socioeconomic area where few children went on to postsecondary education" (p.33).

Fenske et al. went on to describe a wide variety of other types of early intervention programs, finally summarizing the programs as taking six forms: "programs established by philanthropic agencies, federally supported programs, state-sponsored programs with matching federal support, entirely state-supported programs, systemic changes involving school-college collaboration, and college-or university-sponsored programs" (pp. iv–v). After completing their survey, they acknowledged that while their efforts had succeeded in providing the most comprehensive overview of early intervention to date, they had also learned enough about the field to realize that, given the constraints of the prescribed length of the series in which their report was published, they had accomplished only the beginning of a comprehensive survey. For example, they pointed out that countless foundations of all sizes, many inspired by IHAD, sponsor numerous early intervention initiatives that would have been included in a more comprehensive review. Such foundations come in all sizes and with varying levels of purview, including "national, regional, state and even community-based foundations, as well as the vast array of professional, civic and service organizations..." (p. 81). Limitations on their work precluded even a brief review of business-supported programs and the numerous municipal-or metropolitan area-oriented initiatives (p. 82). They concluded that probably the most important outcome of their work was to reveal the need for "the development of a basic data format that would be acceptable to participating agencies, allowing for comparative analysis as well as individualized collection of data to meet special needs of individual communities and programs. The issue of program awareness can be dealt with nationally by creating a central clearinghouse and resource center for information, technical support, and assessment materials.

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It is not clear, however, who can take on this task" (p. 83). Development of a conceptual framework and classification scheme would, however, precede and lay the foundation for a clearinghouse and/or resource center.

A rationale for classification

Everyone uses basic concepts of classification to differentiate and classify organisms and inanimate objects of all kinds (Blackwelder, 1967, p.17). In ordinary life activities, as well as in scientific fields, ordering and classification are foundational processes for advancement of knowledge. Given the wide variety and rapid growth of early intervention programs, the application of a classification scheme to early intervention seems most appropriate.

Classification may be viewed as a process or a product, and there are advantages and disadvantages in either case. Bailey (1994) provides a useful list (pp.11–16). Advantages of classification include its use as a descriptive tool because it reduces complexity and identifies both similarities and differences. Grouping a large number of similar cases into categories allows for more efficient analysis. Bailey uses the example of availability of 40 variables for each of 400 cities, creating an unmanageable mass of 16,000 pieces of data. However, if an analysis process reveals that the 40 variables indicate the 400 cities can be clustered in three groups, say manufacturing, service or recreational centers in which there is much less variance within the groups than between the groups, analysis of similarities becomes much more manageable. At the same time, such clustering of the 400 cities into three types allows for an efficient and detailed analysis of within-group differences (pp. 13-14). Among other advantages listed by Bailey are comprehensiveness and the potential for studying relationships. He points out that "a good typology not only shows an exhaustive set of types, it also shows the exhaustive set of dimensions on which the types are based... Further, it shows the relationships between the types and dimensions, in the sense that each type is located on all dimensions" (p. 13). A classification scheme also provides for a readily accessible inventory of the types into which the cases are grouped. Finally, a good typology is versatile in that it can be modified to reflect new information about categorization and relationships.

Among the disadvantages listed by Bailey is the limitation of a classification scheme to description rather than explanation. However, Bailey points out that such a limitation identified by some social scientists inaccurately denigrates classification for not doing what is beyond its reach, while at the same time failing to appreciate its fundamental and vital contribution as a foundation for explanation (p. 15). Other disadvantages include those related to poor or inadequate execution of the process of classification, for example, the failure to reduce cases into a small enough number of categories to be conceptually manageable, and viewing a typology as a static, rather than a flexible and versatile system. Also, "reification" is always a potential problem in that the conceptual constructs used to classify cases may come to be regarded as real or actual empirical entities rather than concepts developed for the purpose of organizing disparate dates. Finally, typologies have been criticized for relying on the logic of classes, that is, nominal or ordinal levels of data rather than continuous. Bailey points out that to some extent this argument is obsolete due to the development of analysis and data reduction methods that more fully utilize nominal and ordinal data (p. 16). Overall, the advantages of developing a classification scheme to apply to the plethora of early intervention programs seem to clearly outweigh the disadvantages.

Taxonomy or typology?

There are two main types of classification systems, taxonomy and typology. Lewis-Beck, in his introduction to the basic work on typologies and taxonomies by Bailey (1994), points out that "classification involves the ordering of cases in terms of their similarity and can be broken down into two essential approaches: typology and taxonomy. The former is primarily conceptual, the latter empirical" (p. v). Both follow the basic rule for the generic classification process in "that the classes formed must be both exhaustive and mutually exclusive" (emphasis in original) (Bailey, 1994, p.3). An analogy for differentiating the two would be that the former is a deductive approach and the latter is inductive. For example, developing a typology would begin with conceptualizing the dimensions and proceed by fitting the cases into them. Identifying the dimensions conceptually for a typology usually involves a dialectical process in which expert knowledge is the main resource, and is accessed through review of established research literature and interchange of views among experts for the purpose of developing consensus about the nature of the dimensions.

Conversely Lewis-Beck states that "a taxonomy begins empirically rather than conceptually, with the goal of classifying cases according to their measured similarity and observed variables" (in Bailey, 1994, p. v). The specific example he gives is that a researcher might examine a data set containing 100 variables for 16 Latin American nations, using one of a number of commonly used statistical clustering analysis techniques. The data analysis would yield a number

of clusters based on statistical proximity of the properties of the data. But, conceptual meaning for the clusters is not provided by the statistical technique. That must be provided inductively by the researcher. Lewis-Beck notes that "as Professor Bailey sagely points out, the cluster solution does not speak to the conceptual meaning of the cluster, but instead confines itself to demonstration of their empirical presence" (pp. v-vi). As might be expected, since both conceptual and empirical approaches have merit, a combination of the two can be even more useful. Bailey (1990) terms the combined approach the operational or indicator level in which a conceptual classification is first devised, and then empirical examples of some or all of the cells are subsequently identified.

It should be noted that while the foregoing aspects of the generic classification process may be intuitively obvious, the complexity and wide range of cases to be classified often render the actual development of a typology or taxonomy very challenging. It may be safely assumed that this would be the case in developing a classification scheme of early intervention programs. It should also be noted that the techniques for developing them are powerful and sophisticated, and are readily available in the literature of the natural and social sciences. The following two sections examine taxonomies and typologies more thoroughly, and provide examples of their application.

Taxonomy

Taxonomy is regarded as a scientific system of classification, and in the biological fields, as the science of classifying organisms. Prior to the introduction of taxonomy by Linnaeus in 1735 these fields used brief, unordered descriptions of organisms. Taxonomy enabled scientists to discover relationships among organisms and their fields grew and flourished from that point on. In the biological fields the science of taxonomy, and systematics, its more recent variant, operates under strict and complex rules.

Because taxonomy has acquired scientific stature based on its applicability to biology, it is bounded by specific, widely accepted rules and processes. Such stature and specific application to the biological scientific fields has somewhat constrained the use of taxonomy outside of these fields. Within these fields, taxonomy has acquired rules of nomenclature, hierarchical classification, interrelationships among groups within each level of classification and, above all, replicability. These rules have inhibited the use of taxonomy in classification activities in fields such as the social sciences and education. There are, however, exceptions to this restriction, the most notable of which is "Bloom's Taxonomy of Educational Objectives" (Bloom, 1956). This classification scheme came to be known as such because Professor Benjamin Bloom of the University of Chicago edited the report of a five-person committee that developed the scheme. The "taxonomy" was a response to the need to organize curricular objectives in secondary and undergraduate educational programs. As an attempt to bring order into what had become innumerable attempts to develop curricula in response to local needs, the taxonomy met with considerable success. The level of success achieved was attributed to the deep and widely perceived need for moving toward recognition of commonalties in curricular objectives across educational jurisdictions, the cogency and persuasion of the content of the reports, the stature and reputation of the committee and the committee's use of advice from dozens of interested scholars across the country.

As would be expected, criticism of the taxonomy also developed. The committee, in its reports, did not attempt to justify the use of the term "taxonomy", as opposed to "typology" or the more generic term "classification", on the basis of the scheme meeting the criteria of a taxonomy as used in the biological sciences. Instead, the reports referred to generic uses of classification as they might apply to any field without necessarily meeting rigorous scientific rules and processes (Bloom, 1956, p.5). Among other critics, Seddon (1978) concluded that, lacking empirical evidence of commmonalities, the taxonomy's educational value rested on acceptance of its face validity by the preponderance of educators in order to achieve its goal of communication and as a basis for discussion. Kreitzer and Madaus, asserted that wide acceptability was achieved despite the taxonomy's lack of a verifiable, replicable, empirical base. They indicated that while Bloom's theme did not correspond to the criteria of a scientific taxonomy, it provided education "with a scheme that helped them make sense of a great part of their world" (Anderson and Sosniak, 1994, p.78).

Characteristics of typologies

In contrast to the rigorous and rigid classification system requirements inherent in the application of taxonomy to the biological and other sciences, typologies have fewer constraints and thus have more often been used to order phenomena in the social sciences and education fields. In particular, typologies have less exacting requirements than taxonomies for application to ordering or classifying phenomena in education. The Encyclopedia Britannica is quite specific about the openness and flexibility attributes of typologies that make them appropriate for bringing order to

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a universe of diverse phenomena that have no readily apparent underlying commonalities. The Encyclopedia defines typology as a "system of groupings . . . usually called types, the members of which are identified by postulating specific attributes to. . . groupings set up to aid demonstration or inquiry by establishing a limited relationship among phenomena. A type may represent one type of attribute or several that are significant for the problem at hand" (Encyclopedia Britannica, 1994, p.89). The Encyclopedia definition of typology further stresses that its value in large-scale applications to social sciences and educational problems of ordering lies in its malleability to the problem at hand, rather than requiring that the ordering effort be constrained to the rules of the classification scheme as would be the case in developing a taxonomy. Thus, a typology would seem to be well suited to bring order to a widely diverse set of phenomena such as early intervention programs. Furthermore, typologies can be continually adapted and molded to the problem at hand as the classification scheme develops, and the perception of commonalities emerges. Typologies, as "characteristic of the social sciences" are distinctly utilitarian, a means to an end. As such, acceptance by the field is dependent on the extent to which they are seen as useful. In the case of early intervention programs, this would mean that decision-makers and role players in the field would acknowledge that a classification scheme is necessary and useful, and that a particular classification effort is producing useful results.

Typologies in education

In practical application in education, typologies are often used to help order phenomena (such as programs) according to a hierarchy of values or attributes as perceived by the researcher. This application corresponds to the accepted view of the nature of a typology, which assumes that certain factors are of overriding significance (Encyclopedia Britannica, 1994, p.90). The foregoing definition and description corresponds to the way typologies are often used in education. For example, Nickse (1991) developed a typology for more than 500 intergenerational literacy programs in the U.S. because the field is new "and untested and it is difficult to identify and classify these programs" (p. 3). Her view of the characteristics and uses of a typology are typical of its application in the field of education: "A typology identifies and classifies programs by key components and provides examples of each type. A typology, useful to practitioners, helps in planning programs, discussing them, and in training staff" (p. 3). Nickse's typology is based on what she describes as four "generic program types", 1) parent/child, 2) adult/child, 3) adult alone, and (4) child alone. She posited the types through review of the literature and expert knowledge of the field. Then, she validated the four types empirically by examining the more than 500 programs to identify commonalties of the program goals and characteristics.

Bauch (1994) reviewed several of the most widely used typologies in the area of involvement by parents in their children's educational development and attainment. His review included the categories developed by Gordon in the 1970's (Gordon, 1979) that identified impact of parental involvement according to locus of the activity setting, namely, home, school or community. Gordon further classified each of these categories by level of activity setting, namely the (a) microsystem, identified as the family, (b) the mesosystem, identified as the school and neighborhood, (c) the exosystem, identified as the customs, laws and regulations that affect parental involvement at all levels, and (d) the macrosystem "representing major social, economic, and political aspects of the larger society " (Bauch, p.54).

Lyons, Robbins and Smith (1993) described the results of a large study of parental involvement categories in 1978. The study was conducted by the System Development Corporation (SDC), and examined 57 federally-supported projects. SDC found diverse practices among the projects, which were categorized into six types: 1) home-school relations 2) home-based institutions 3) school support 4) instruction at school 5) parent education, and 6) advisory groups. Since most projects funded under the Elementary and Secondary Act of 1965 require parental involvement, the SDC categories enabled program evaluators to compare projects based on commonalties of types of parental involvement. The evaluation results then guided further research and pilot project development funded by the federal government.

Bauch reviewed several other classifications of parental involvement, including that of Berger (1991), Chavkin and Williams (1993), Honig (1990), and Jones (1989). He describes the typology developed by Epstein and her colleagues at Johns Hopkins University as especially useful in guiding improvement of parental involvement practices and programs. The Epstein typology was developed empirically, but also recognized conceptual and philosophical commonalties. The six Epstein types are: 1) basic obligations of families 2) basic obligations of schools 3) involvement at school 4) involvement in learning activities at home 5) involvement in decision-making, governance and advocacy, and 6) collaboration and exchange with community organizations. Bauch indicates that this typology has acquired significant stature and acceptance in the field, and as such is "frequently cited in other studies and articles"

(p.58). He asserts that the Epstein Typology has "come to be the framework that schools can use to expand and enrich parental involvement practice" and have further "become the organizing themes around a program of research on parent involvement" (p.58). Bauch's assertion is borne out by reviewing the research literature on parental involvement. For example, Brian (1994) used Epstein's typology to compare views of respondents she surveyed regarding appropriate roles for parental involvement in high schools. She surveyed parents, students, teachers and administrators in these high schools with differing characteristics. The typology not only provided an organizing theme for the survey data, it also afforded comparability of results with other research studies that used the typology.

Another example of a typology being used to organize action plans in education is provided by Hollifield (1988). He identifies development and use of a typology as an "intermediate step" between (a) reviewing and synthesizing research on drop out prevention strategies in middle and high schools, and (b) developing plans to implement the most effective strategies. He describes the collaborative efforts of several researchers to develop a four-category typology that includes " 1) success in school 2) positive relationships in school 3) relevance of school, and 4) outside interference's" (p.72). Hollifield pointed out that the typology brought order to drop out prevention efforts by allowing middle and high school educators "to examine and implement approaches and programs that directly address the reasons for student dropouts in their schools. It also has implications for elementary school educators, who will quickly recognize that many of the problems identified by the typology have their genesis in the elementary school years" (p.72). Beatty-Guenter (1994) used a similar approach to develop and apply a typology to synthesize retention strategies in community colleges.

Typologies can be, and often are, used to organize reviews of literature. Probably the most extensive review of literature in higher education is the effort by Pascarella and Terenzini to synthesize the research on the impact of college on students over the twenty-year period from 1969 to 1989. These authors began their work by adopting "a guiding conceptual or organizational framework" (Pascarella and Terenzini, 1991, p.5). They considered the extant classification schemes for organizing the outcomes of college and selected the one developed by Astin (1973) to define the scope and content of their synthesis. Astin had suggested that three dimensions could be used to conceptualize college outcomes: type of outcomes, type of data and time span. Pascarella and Terenzini used the first two of these as a 2x2 matrix with the type of outcome dichotomized as cognitive or affective cross-tabulated by two types of data, psychological or behavioral. Within each of the four cells of the matrix they then organized their synthesis according to six lines of inquiry about the evidence that exists to answer each of six questions, for example, "what evidence is there that individuals change during the time in which they are attending college?" (pp.5–8). Similarly, Grobe, Curnam and Melchior (1990) used typologies to classify the extensive literature they reviewed on the effectiveness of business/education partnerships.

Typology applied to early intervention

Any typology of service programs must be based on the unique needs of the various participants, program evaluators, or service providers who are most likely to utilize such information. Although it may not be feasible to design a matrix or classification scheme that will take into account the interests of all stakeholders, a first-cut would be useful as a framework for further research. An initial approach to the construction of a typology can be undertaken by identifying the common themes and expressed needs of specified individuals and organizations. One approach might be to give primary attention to program evaluators at state and federal levels, and administrators in universities and colleges who would benefit from increased awareness on this topic.

In recent years there has been a substantial increase in the scope of publicly funded evaluations of early intervention. An example of this is the current large-scale, multi-year evaluation of the Upward Bound Programs, which is being funded by the federal government. Upward Bound is the most prominent of the original TRIO Programs established during the Johnson administration's "War on Poverty," currently costing over $170 million. The purpose of this evaluation and others like it are to inform, define, and guide future policy for early intervention and affect the funding, control, and longevity of such programs. The following are some of the specific elements of information that would be important to evaluators:

1 Sources of funding
2 Program costs
3 Problems or needs that the programs address
4 Service recipients
5 Specific services provided

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6 Modes of service delivery
7 Intended outcomes
8 Program limitations and restrictions
9 Peer programs and alternative programs

As far as college and university administrators are concerned, an expanded knowledge of program offerings could help enable the formation of necessary linkages for the bolstering of access. For years, early intervention has helped open the doors of higher education to students who represent under-served populations. In an era in which affirmative action policies are increasingly under fire, programs like Upward Bound offer campus administrators an increasingly valuable avenue for reaching promising students from target populations. However, the fragmented and uncoordinated nature of early intervention has hindered administrators from realizing the full benefits of existing programs. These benefits could be realized through the enhancement of recruitment, retention, diversity, marketing, and effective resource utilization. Below are elements of information that would be of use to college and university administrators:

1 Program control/oversight
2 Demographics of students served
3 Collaborative efforts between K–12 and higher education
4 Availability of scholarships
5 Availability of other support services (tutoring, counseling, etc.)
6 Academic performance requirements of program participants
7 Field of study requirements (e.g. science, teaching, business)
8 Communities and geographic areas served by the programs
9 Higher Education Institutions which use the programs as "feeders"

By devising a classification scheme that includes all of the above-mentioned elements, the task of charting the expansive territory of early intervention will become substantially more manageable. However, the development of a meaningful system for classification is not a simple matter, and carries with it certain complicated tasks. Perhaps the most difficult of these tasks is the formation of distinct definitions for programs and program elements.

Next steps

Assuming we have made the case for developing a typology of early intervention programs, what dimensions or perspectives could it contain at the initial stages of its development?

First of all, it is not our intention to propose even a preliminary typology. We believe that such a development should emanate from a broad coalition of stakeholders in the field of early intervention. In the following section that concludes this chapter we offer some strategies relating to how a coalition could be formed and proceed to develop a typology. In the present section we identify some concepts that could guide discussion toward the development of a typology. The concepts are derived from our review of issues and program characteristics in this and an earlier work (Fenske et al., 1997).

The following tentative typological template was created as a suggestive framework for further development. Creation of such a framework can be approached in a number of ways, for example, by first considering the needs of a specific stakeholder group. In the following example we made assumptions regarding the special interests of university administrators, especially admission officers. These needs fell into the following categories: Funding sources, auspices, program size, geographic locale, participant eligibility, and services offered. The categories are by no means exhaustive, but merely suggestive. Also, the categories are presented at a high level of generality (level one) with the intention that further detail will be addressed in secondary or level-two matrices. In a level-two matrix, for example, a category such as funding sources could be further broken down into financial support coming from foundations, businesses, and other private sponsors under private funding and federal or state-level sources under public funding agencies. A level-three matrix of the same category would include further detail such as funding levels and periods. Below are examples of potential level-two and perhaps level-three categories:

Funding

1 Funding levels for individual programs
2 Requirements for public/private matching grants
3 Funding restrictions

Services offered

1 Types of financial assistance
2 Scholarship restrictions
3 Types of academic and student services
4 Collaborations between universities and schools

As mentioned earlier in this chapter, typological categories should be both exhaustive and mutually exclusive. One challenge with developing such typologies may be that certain programs do not have discrete attributes which facilitate categorization into a singular type or class. The accuracy of each category could be refined through continuous feedback from relevant stakeholders.

A nationally shared typology will provide the means by which the originators, administrators and evaluators of early intervention programs can identify which services are most needed and which populations are the least served. In localized regions where programs are relatively more abundant and perhaps overlap, it might be valuable to utilize the shared typological data to insure that services are less duplicative and more complementary. For example, one school district may be targeted by two separate and independent programs which focus only on students who wish to become engineers, while another district may be served by two programs that focus on students who wish to become teachers. With the benefit of common typological information and a plan for collaboration, the two districts could share services and provide each other with needed programmatic diversity.

However, the typology itself does not intrinsically indicate whether or not programs and services are redundant. It is intended purely as a non-judgmental means of classification and categorization. Unintended outcomes, such as program reductions or elimination, cannot be justified by means of typological information alone. Such outcomes require in depth programmatic analysis and thorough evaluation. Although it is likely that the typology will be sought as a useful resource by program evaluators, it is important to keep mindful of the fact that it is only a tool and not in itself an appraisal or assessment. Overall, a well- constructed typology may best serve as a common ground for a large array of diverse programs and a platform for further development and collaborative endeavors.

A blueprint for action

The most traditional or common approach to the practical development of a typology would entail initiation by a federal governmental entity or by action of an organization with a wide purview. Fiscal and human resource allocations would be necessary from within the entity or organization. In this scenario the task of conceptualizing the typology and disseminating drafts for comment and criticism to relevant stakeholders originates from within the organization This provides the originating organization with "proprietary" rights over the typology, would probably encourage a certain level of acceptance among stakeholders who are chosen to be included in the process but would probably inhibit acceptance by stakeholders excluded from the process.

A second scenario might involve initiation by a private foundation or higher education organization less broadly representative than the type suggested above. Such an organization would most likely choose to invite collaboration from a wide array of similar entities. The set of organizations that agree to collaborate would encourage collegiality among the major types of stakeholders. The collaborating organizations could convene a planning conference that would designate the goals, time and task schedule and resources needed. The coalition of organizations could contribute and pool the necessary financial and human resources. The pooled resources may be adequate for the task, or the coalition may have to seek additional funds and/or experts and consultants to carry on the work.

The third scenario would begin with individuals or organizations responding to a request for proposals (RFP) originating from a large foundation or government agency. The proposal could be for a limited planning grant or a larger grant for the entire project, from initial planning through dissemination of the final version of the typology. In this scenario the most successful way to garner wide acceptance and use of the final product would be to include a diverse group of stakeholders as judges for the various proposals.

A final possible scenario involves a significantly broad-based grassroots effort. The effort would begin by an educational organization approaching a large foundation or governmental entity to encourage it to issue an RFP for a colloquium of stakeholder organizations and qualified scholars. In the colloquium format, these participants would work together to determine the format, categories and uses for the typology. Also, the colloquium would facilitate

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the articulation and coordination of discrete stages in the development of a final typology. By including such a diverse group of stakeholders from the very onset, it is more likely that the final product will be widely accepted and utilized. A collaborative effort of this type may be more time consuming, however the quality, accuracy, utility and universal acceptance of the final product would justify the added effort.

A list of organizations with a national purview that might be interested in participating in any of the above or other scenarios would include the American Council on Education, the National Education Association, the Education Commission of the States and the American Association of School Administrators, among many others. Organizations that have already been active in at least some aspects of early intervention would include the American Association for Higher Education and its affiliation with the Education Trust, and the College Board with its sponsorship of Equity 2000 and other initiatives. Certain organizations have a clear and direct relationship with early intervention. These include the Council for Opportunity in Education (formerly known as the National Council of Educational Opportunity Associations) and the National TRIO Clearinghouse. Stakeholders include the federal Department of Education, foundations and other organizations that support early intervention programs, administrators and staff of such programs, program participants including students and their parents, and K–12 schools and postsecondary institutions.

Activities involving organizations and stakeholders under any of the above scenarios could include surveys of early intervention program staff and focus groups of knowledgeable stakeholders to identify potential dimensions of the typology. To be useful a typology must gain wide acceptance in the field. This requires wide participation and support of its development, broad dissemination of preliminary models for feedback, modification and refinement, and long-term maintenance of the typology including evaluation of its utility to the field. It is for these reasons that we recommend the last scenario (scenario four) as the best approach for developing a typology.

With scenario four in mind, we suggest the following steps: (a) a respected agency or group of individuals would take the lead in making the call for the formation of the colloquium; (b) the lead entity would determine a significantly broad based list of interested parties to invite as collaborators to the colloquium; (c) a funding source such as a large foundation would be identified and adequate funds obtained; (d) once the colloquium is formed and established an agreed upon definition of early intervention should be formulated by the group as a whole; (e) groups of preliminary early intervention program variables and characteristics, that reflect the needs of specific stakeholders, should be identified and catalogued; (f) utilizing the broad knowledge base of the colloquium, an initial catalogue of existing early intervention programs should be compiled; (g) a thorough search of the literature should be made to identify and carefully study typologies in education that have proven particularly effective, e.g., the Epstein typology of parental involvement discussed earlier; (h) a subgroup of participants should be selected to visit early intervention sites to develop a core of variable definitions based on program observation; (i) a draft model of a multi-level typology should be produced and a visual format should be determined; (j) the model should be disseminated to all relevant parties with a request for feedback; (k) feedback from relevant parties should be reviewed and determination made as to whether or not modifications should be made to the existing model; (l) a sub-group of the colloquium should be selected to maintain the typology and arrange for periodic meetings of the group as a whole to ensure accuracy and wide-spread acceptance of the typology.

Conclusion

The purpose of this chapter has been to express the need for development of a typology of early intervention programs, and to suggest some ways in which development could take place. It seems evident that regardless of the level of success of our efforts, work toward development of the typology will commence and succeed only if a critical mass of stakeholders perceive the need for, and potential benefits of, systematic classification of early intervention programs.

A review of the advantages and disadvantages of a typology discussed at various points in this chapter strongly suggests that a typology would benefit early intervention in many ways.

1 Classification reduces complexity, identifies both similarities and differences, and allows for efficient organization and effective analysis of data.
2 Early intervention has grown so rapidly and become so diverse that it is increasingly difficult to view the various approaches as having similar and cohesive goals.
3 The sprawling proliferation of programs that hinders a common identity may have constrained potential

financial and political support.
4. Wide program variation and lack of a unifying conceptual framework has hampered communication and possible collaboration among programs.
5 Lack of a classification system restricts perception of possible gaps and excessive duplication among programs.
6 A typology would greatly facilitate literature thoroughness and value of literature reviews in the field.
7 A typology would enhance effective evaluation by enabling valid comparisons among programs of similar type.

Consider, for example, how useful a typology would have been to GEAR UP program administrators in the current initial year of operation. GEAR UP solicited and received program proposals from most, if not all, of the 50 states. Hundreds of proposals were received in a short period of time before the deadline of April 30, 1999. The proposal authors were encouraged to include collaboration among a wide array for private and public entities to meet a wide variety of goals. Each of the proposals was, of course, evaluated on it's own merit. However, it would have been extremely useful if GEAR UP administrators to knew the extent to which the program proposals overlapped or duplicated excessively. It would have been equally useful to know if they left gaps in desired coverage of goals and target populations.

As mentioned in the introduction to this chapter, the overall support for early intervention programs is significantly more widespread than support for other approaches to increasing student access to colleges and universities. A variety of stakeholders who are presently "out of the loop" regarding awareness of early intervention efforts are likely to fall behind in recognition and utilization of such services that are quickly becoming the vanguard for the enhancement of access to higher education. Such stakeholders may include among others:

1 University admissions officers
2 Academic officers
3 Recruitment officers
4 Public officials
5 Leaders of civic organizations
6 Intervention program administrators
7 Funding agencies
8 Program evaluators
9 K-12 teachers and guidance counselors
10 K-12 administrators
11 Students and their families

An effective typology would result in a useful mechanism for servicing and linking the various stakeholders for the purposes of information and potential collaboration. Breaking the isolation of individuals and institutions and fostering the recognition of mutual interest and the benefits of collaborative efforts would go far to establish a sense of interdependence. The most recent large-scale federal investment in early intervention, GEAR UP, focuses most prominently on the collaboration of schools, colleges and other relevant agencies. This initiative requires a centralized and user-friendly information system that will encourage and facilitate implementation of such programs and evaluation of the degree to which they achieve articulated objectives and goals. We believe that the proposed typological approach will produce the most useful, accurate and inclusive basis for such an information system.

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